Final

Site Investigation Report
Former Motor Pool Area 1800/1900
Parcels 145(7) and 52(7) and the
UST at the Bowling Alley, Building 1928, Parcel 48(7)

Fort McClellan
Calhoun County, Alabama

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Executive Summary

In accordance with Contract Number DACA21-96-D-0018, Task Order CK05, IT Corporation completed a site investigation (SI) at the Former Motor Pool Area 1800/1900, Parcels 145(7) and 52(7), and the underground storage tank at the Bowling Alley, Building 1928, Parcel 48(7), hereafter referred to as the Former Motor Pool Area 1800/1900, at Fort McClellan, Calhoun County, Alabama. The SI was conducted to determine whether chemical constituents are present at the Former Motor Pool Area 1800/1900 and, if present, whether the concentrations would present an unacceptable risk to human health or the environment. The SI at the Former Motor Pool Area 1800/1900 consisted of the sampling and analyses of 12 surface soil samples, 17 subsurface soil samples, 11 groundwater samples, 2 depositional soil samples, 5 surface water samples, and 5 sediment samples. In addition, 10 temporary and 1 permanent groundwater monitoring wells were installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

The analytical results indicate that metals, volatile organic compounds, and semivolatile organic compounds (SVOC) were detected in the environmental media sampled. To evaluate whether the detected constituents present an unacceptable risk to human health or the environment the analytical results were compared to human health site-specific screening levels (SSSL), ecological screening values (ESV), and background screening values.

The potential impact to human receptors is expected to be minimal. The metals that exceeded residential human health SSSLs with the exception of cadmium (FTA-145-GP10) were within background concentrations or the range of background values, and thus do not pose an unacceptable risk to human receptors. The SVOCs benzo(a)anthracene and benzo(a)pyrene were detected in one surface soil sample at concentrations exceeding residential human health SSSLs but below PAH background screening values for soils beneath asphalt. The SVOC bis(2-ethylhexyl)phthalate exceeded SSSLs in groundwater at FTA-145-GP02. However, bis(2-ethylhexyl)phthalate is a common laboratory contaminant in groundwater samples. In the industrial/business land use scenario, the potential threat to human health is expected to be negligible.

Several metals were detected in site media at concentrations exceeding ESVs and background concentrations. In addition, the concentrations of six SVOCs exceeded ESVs. However, the potential impact to ecological receptors is expected to be minimal based on the existing viable habitat. The site is a well-developed area, and is projected for continued industrial/business use. Viable ecological habitat is presently limited and is not expected to increase in the future land-use scenario. Consequently, the threat to potential ecological receptors is expected to be low.

Based on the results of the SI, past operations at the Former Motor Pool Area 1800/1900 do not appear to have adversely impacted the environment. The metals and organic compounds detected in site media do not pose an unacceptable risk to human health or the environment. Therefore, IT Corporation recommends "No Further Action" and unrestricted land reuse at the Former Motor Pool Area 1800/1900.

1.0 Introduction

The U.S. Army has selected Fort McClellan (FTMC) located in Calhoun County, Alabama, for closure by the Base Realignment and Closure (BRAC) Commission under Public Laws 100-526 and 101-510. The 1990 Base Closure Act, Public Law 101-510, established the process by which U.S. Department of Defense (DOD) installations would be closed or realigned. The BRAC Environmental Restoration Program requires investigation and cleanup of federal properties prior to transfer to the public domain. The U.S. Army is conducting environmental studies of the impact of suspected contaminants at parcels at FTMC under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Former Motor Pool Area 1800/1900, Parcels 145(7) and 52(7), under Contract Number DACA21-96-D-0018, Task Order CK05. Also, the USACE contracted with IT to provide environmental services for an underground storage tank (UST) closure assessment at the Bowling Alley, Building 1928, Parcel 48(7), under task Contract Number DACA21-96-D-0018, Task Order CK08.

This SI report presents specific information and results compiled from the SI and UST closure assessment, including field sampling and analysis and monitoring well installation activities conducted at the Former Motor Pool Area 1800/1900, Parcels 145(7) and 52(7), and the UST at the Bowling Alley, Building 1928, Parcel 48(7), hereafter referred to as Former Motor Pool Area 1800/1900.

1.1 Project Description

The Former Motor Pool Area 1800/1900 was identified as an area to be investigated prior to property transfer. The Former Motor Pool Area 1800/1900 was identified as a Category 7 site in the environmental baseline survey (EBS) (Environmental Science and Engineering, Inc. [ESE], 1998). Category 7 sites are areas that are not evaluated and/or that require further evaluation.

Site-specific field sampling plan (SFSP) attachments and site-specific safety and health plan (SSHP) attachments were finalized in September 1998 (IT, 1998a) for Parcels 145(7) and 52(7), and in September 1999 (IT, 1999) for Parcel 48(7). The SFSPs and SSHPs were prepared to provide technical guidance for sample collection and analysis at the Former Motor Pool Area 1800/1900. The SFSPs were used in conjunction with the SSHPs as attachments to the installation-wide work plan (WP) (IT, 1998b) and the installation-wide sampling and analysis

plan (SAP) (IT, 2000a). The SAP includes the installation-wide safety and health plan and quality assurance plan (QAP).

The SI included field work to collect 12 surface soil samples, 17 subsurface soil samples, 11 groundwater samples, 5 surface water samples, 5 sediment samples, and 2 depositional soil samples to determine whether potential site-specific chemicals are present at the Former Motor Pool Area 1800/1900, and to provide data useful for supporting any future corrective measures and closure activities.

1.2 Purpose and Objectives

The SI program was designed to collect data from site media and provide a level of defensible data and information in sufficient detail to determine whether chemical constituents are present at the Former Motor Pool Area 1800/1900 at concentrations that would present an unacceptable risk to human health or the environment. The conclusions of the SI in Chapter 6.0 are based on the comparison of the analytical results to human health site-specific screening levels (SSSL), ecological screening values (ESV), and background screening values for FTMC. The SSSLs and ESVs were developed by IT as part of the human health and ecological risk evaluations associated with SIs being performed under the BRAC Environmental Restoration Program at FTMC. The SSSLs, ESVs, and polynuclear aromatic hydrocarbon (PAH) background screening values are presented in the *Final Human Health and Ecological Screening Values and PAH Background Summary Report* (IT, 2000b). The PAH background screening values were developed by IT at the direction of the BRAC Cleanup Team (BCT) to address the occurrence of PAH compounds in surface soils as a result of anthropogenic activities at FTMC. Background metals screening values are presented in the *Final Background Metals Survey Report, Fort McClellan, Alabama* (Science Applications International Corporation [SAIC], 1998).

Based on these conclusions, the BCT will make a decision to either propose "No Further Action" at this site or to conduct additional work at the site.

The original work plan for the Former Motor Pool Area 1800/1900 did not include the area in the vicinity of the Bowling Alley. However, based on review of the EBS and a review of available aerial photographs from 1940 through 1994, it appears that the boundary of the Former Motor Pool Area 1800/1900 extends to 21st Street. The aerial photographs, taken from 1940 through 1994, indicate that little or no activity occurred in the location of Building 1928 prior to its construction in 1977 (EBS, 1998). The photographs indicate the site was an open field that,

became partially wooded on the eastern side. There were not any observed structures at the location of Building 1928. There were two buildings in the aerial photographs located between Building 1997 and the future location of Building 1928. Some time between 1976 and 1982 the two buildings no longer appeared on the aerial photographs. The documented use of these buildings was "general purpose storage" (EBS, 1998). The UST at the Bowling Alley, Building 1928, Parcel 48(7), has been included in this report because UST activities there are within the new boundaries of the Motor Pool 1800/1900, Parcel 145(7).

The UST closure assessment at Parcel 48(7) was designed to collect data from soil and groundwater samples to determine if past UST operations have impacted soil and groundwater. Additional sampling and analyses have been completed so a closure report can be performed and the property transferred as part of the Former Motor Pool Area 1800/1900 SI.

1.3 Site Description and History

The Former Motor Pool Area 1800/1900, Parcels 145(7) and 52(7), is located on 10th Avenue, west of the Post Office in the central area of the Main Post (Figure 1-1). This Former Motor Pool covers approximately 15.5 acres and is not currently in use. Information is not available concerning dates or details of the former operations at this Motor Pool. Light motor vehicle maintenance was conducted inside Building T-1997 (Figure 1-2). The drains in this maintenance building discharged to the sanitary sewer. Two other buildings (T-1898 and T-1899) located south of Building T-1997 were used for storage (Figure 1-2). The facility does not have an active washrack, but the Former Motor Pool had a washrack at Building T-1831 which was built in 1976 (ESE, 1998). Building T-1831 is no longer present at the site; however, a concrete foundation located just south of Building T-1899, may be the location of former Building T-1831. At one time, an oil/water separator (OWS) was present at this washrack, connected directly to the sanitary sewer system; however, evidence of the OWS was not observed. A review of early aerial photographs did not reveal the washrack or OWS. However, two aboveground vehicle grease racks were observed in the northeast section of the site (Figure 1-2).

A 2,500-gallon steel heating oil tank (Parcel 52[7]) was located at the south end of Building T-1997. The original UST was removed in October 1996, and was subsequently replaced with a new 2,500-gallon fiberglass tank equipped with interstitial monitoring. The newly installed UST appears to meet Alabama Department of Environmental Management (ADEM) requirements (Southern Environmental Management & Specialties [SEMS], 1997).

A 1,000-gallon steel-heating oil tank (Parcel 48[7]) was located at the south end of Building 1928. The tank and its product lines were removed in July 1996 (IT, 1998a) and were subsequently replaced with a fiberglass UST. No documentation, except of the year of construction, was found for the UST at the Bowling Alley, Building 1928, Parcel 48(7).

The site slopes primarily from the east to the west, with the elevation ranging from 760 to 790 feet above mean sea level. Surface water drains to the west. South Branch Cane Creek, located approximately 200 feet west of the site, flows to the north (Figure 1-2).

2.0 Previous Investigations

An EBS was conducted by ESE to document current environmental conditions of all FTMC property (ESE, 1998). The study was to identify sites that, based on available information, have no history of contamination and comply with DOD guidance for fast-track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria:

1. Areas where no storage, release, or disposal of hazardous substances or petroleum products has occurred (including no migration of these substances from adjacent areas)

2. Areas where only release or disposal of petroleum products has occurred

3. Areas where release, disposal, and/or migration of hazardous substances has occurred, but at concentrations that do not require a removal or remedial response

4. Areas where release, disposal, and/or migration of hazardous substances has occurred, and all removal or remedial actions to protect human health and the environment have been taken

5. Areas where release, disposal, and/or migration of hazardous substances has occurred, and removal or remedial actions are underway, but all required remedial actions have not yet been taken

6. Areas where release, disposal, and/or migration of hazardous substances has occurred, but required actions have not yet been implemented

7. Areas that are not evaluated or require additional evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA) (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, ADEM, U.S. Environmental Protection Agency (EPA) Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)-regulated substances, petroleum products, and Resource Conservation and Recovery Act (RCRA)-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal

and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels. Previous investigations have been conducted at Parcels 145(7), 52(7), and 48(7), as discussed in the following sections.

2.1 Former Motor Pool Area 1800/1900, Parcels 145(7) and 52(7)

The 2,500-gallon steel heating oil tank located at the south end of Building T-1997 was removed and replaced in October 1996 with a new 2,500-gallon fiberglass tank. The closure report stated that groundwater was more than 5 feet below the excavation. The report also listed the results of one groundwater sample (TP1-1997) analyzed for total petroleum hydrocarbons (TPH) (SEMS, 1997). The analytical results indicate that TPH was not present in the sample above the method detection limit (MDL) (Table 2-1). A description of the specific location or depth of the groundwater sample is not provided in the closure report.

The Former Motor Pool Area 1800/1900, Parcels 145(7) and 52(7), was identified as a Category 7 CERFA site: a parcel where petroleum products were stored, and possibly released onto the site or to the environment, and/or were disposed on site property. Limited sampling and analyses of soil and water did not verify whether there was a potential release or disposal of PSSC on site. The Former Motor Pool Area 1800/1900, Parcels 145(7) and 52(7), lacked adequate documentation, and therefore required additional evaluation to determine the environmental condition of the parcel.

2.2 UST at the Bowling Alley, Building 1928, Parcel 48(7)

The 1,000-gallon heating oil tank and product lines located at Building 1928 were removed and replaced in 1996. A closure report, prepared by Theta Engineering Inc. (IT, 1998c), documented that a product odor was not detected within the excavation. An examination of the excavated tank revealed that it was in good condition. The depth to groundwater was estimated to be greater than 5 feet below the base of the excavation. This depth was determined by extending the tank excavation an additional 5 feet. The closure report indicated that samples were not collected, and that there was no evidence of contamination. According to the closure report, approximately 116 cubic yards (yd^3) of soils were excavated for the new tank installation and transported to the FTMC construction landfill. A value engineering change proposal for not obtaining closure samples served as an attachment to the closure report.

Table 2-1

Sample Data for Removal of the 2,500-Gallon Heating Oil UST at Building 1997, Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7) Fort McClellan, Calhoun County, Alabama

Sample Number	Sample Date	Sample Media	Sample Location	Depth (feet)	Analytical Parameter TPH (mg/L)
TP1-1997	10/28/1996	Water	not given	not given	< 6.44

Source: Southern Environmental Management & Specialties (SEMS), 1997, *Closure Report, Storage Tank Removals, Site Remediation, and Site Restoration, Fort McClellan Alabama,* February.
mg/L - Milligrams per liter
TPH - Total petroleum hydrocarbons
UST - Underground storage tank

In accordance with the value engineering change proposal, soil not exhibiting visual or olfactory evidence of contamination would be considered noncontaminated, and could be used to backfill the tank excavation. Soil exhibiting visual and/or olfactory evidence of contamination was field screened using a photoionization detector (PID). Soils exhibiting a PID reading of 20 parts per million (ppm) or less were not considered contaminated. Waste characterization samples were collected from soils exhibiting evidence of contamination. UST closure samples were collected only if all soil exhibiting evidence of petroleum contamination was not overexcavated (IT, 1999b).

3.0 Current Site Investigation Activities

This chapter summarizes SI activities conducted by IT at the Former Motor Pool Area 1800/1900, including environmental sampling and analysis, and monitoring well installation.

3.1 Environmental Sampling

The environmental sampling performed during the SI at the Former Motor Pool Area 1800/1900 included the collection of surface and depositional soil samples, subsurface soil samples, surface water and sediment samples, and groundwater samples for chemical analysis. The sample locations were determined by observing site physical characteristics noted during a site walkover, and by reviewing historical documents pertaining to activities conducted at the site. The sample locations, media, and rationale are summarized in Table 3-1. Sampling locations are shown on Figure 3-1. Samples were submitted for laboratory analyses of site-related parameters listed in Section 3.3.

3.1.1 Surface and Depositional Soil Sampling

Surface soil samples were collected from 12 locations and depositional soil samples were collected from 2 locations at the Former Motor Pool Area 1800/1900. Surface and depositional soil sampling locations and rationale are presented in Table 3-1. Sampling locations are shown on Figure 3-1. Sample designations and quality assurance/quality control (QA/QC) samples are listed in Table 3-2. Surface and depositional soil sampling locations were determined in the field by the on-site geologist based on the sampling rationale, presence of surface structures, site topography, and buried utilities.

Sample Collection. Surface soil samples were collected from the upper 1 foot of soil by either direct-push technology or with a 3-inch diameter stainless-steel hand auger using the methodology specified in Section 4.9 of the SAP (IT, 2000a). Depositional soil samples were collected from the upper 1 foot of soil with a stainless-steel trowel. Surface and depositional soil samples were collected by first removing surface debris, such as rocks and vegetation, from the immediate sample area. The soil was collected with the sampling device and screened with a PID in accordance with Section 4.7.1.1 of the SAP (IT, 2000a). Samples for volatile organic compounds (VOC) analyses were collected directly from the sampler with three EnCore® samplers. The remaining portion of the sample was transferred to a clean stainless-steel bowl, homogenized, and placed in the appropriate sample containers. Sample collection logs are

Table 3-1

Sampling Locations and Rationale
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Media	Sample Location Rationale
FTA-145-GP01	Subsurface Soil	A subsurface soil sample was collected adjacent (east side) to the heating oil underground storage tank (UST) at the south end of Building T-1997.
FTA-145-GP02 (SS) FTA-145-GP02 (W)	Surface Soil Subsurface Soil Groundwater	Surface soil, subsurface soil and groundwater samples were collected at the parking lot drain east of flammable storage building and southeast of Building T-1997.
FTA-145-GP03 (SS) FTA-145-GP03 (W)	Surface Soil Subsurface Soil Groundwater	Surface soil, subsurface soil and groundwater samples were collected in front of roll up door on east side of Building T-1898.
FTA-145-GP04 (SS) FTA-145-GP04 (W)	Surface Soil Subsurface Soil Groundwater	Surface soil, subsurface soil and groundwater samples were collected in front of roll up door on east side of Building T-1899.
FTA-145-GP05 (SS) FTA-145-GP05 (W)	Surface Soil Subsurface Soil Groundwater	Surface soil, subsurface soil and groundwater samples were collected adjacent to concrete foundation that may have been a wash rack during former motor pool activities.
FTA-145-GP06 (SS) FTA-145-GP06 (W)	Surface Soil Subsurface Soil Groundwater	Surface soil, subsurface soil and groundwater samples were collected in the low drainage area south of Building T-1997 and the fenced parking lot. This location is north of Building T-1898.
FTA-145-GP07	Surface Soil Subsurface Soil Groundwater	Surface soil, subsurface soil and groundwater samples were collected in the gravel driveway around the south traffic islands in front of Buildings T-1898 and T-1899.
FTA-145-GP08	Surface Soil Subsurface Soil Groundwater	Surface soil, subsurface soil and groundwater samples were collected in the gravel driveway around the center traffic islands in front of Buildings T-1898 and T-1899.
FTA-145-GP09 (SS) FTA-145-GP09 (W)	Surface Soil Subsurface Soil Groundwater	Surface soil, subsurface soil and groundwater samples were collected in the gravel driveway around the north traffic islands in front of Buildings T-1898 and T-1899.
FTA-145-GP10	Surface Soil Subsurface Soil Groundwater	Surface soil, subsurface soil and groundwater samples were collected in the low drainage area at the northwest end of Building T-1997.
FTA-145-GP11	Subsurface Soil	A subsurface soil sample was collected adjacent (south side) to the heating oil UST at the south end of Building T-1997.
FTA-145-GP12	Surface Soil Subsurface Soil Groundwater	Surface soil, subsurface soil and groundwater samples were collected in the gravel driveway in the northeast section where two aboveground grease racks were observed on early aerial photographs.
FTA-145-GP13	Surface Soil Subsurface Soil Groundwater	Surface soil, subsurface soil, and groundwater samples were collected in the northern portion of the parcel to address buildings observed in aerial photographs.

Table 3-1

Sampling Locations and Rationale
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Media	Sample Location Rationale
FTA-145-GP14	Surface Soil Subsurface Soil	Surface soil and subsurface soil samples were collected in the northern portion of the parcel to address buildings observed in aerial photographs.
FTA-145-SW/SD01	Surface Water Sediment	Surface water and sediment samples were collected in South Branch Cane Creek near the northwest corner of the site.
FTA-145-SW/SD02	Surface Water Sediment	Surface water and sediment samples were collected in South Branch Cane Creek, west of the center portion of the site.
FTA-145-DEP01	Depositional Soil	A depositional soil sample was collected at a low elevation area where surface water runoff could collect, and potentially percolate into the substratum or deposit suspended or dissolved materials after evaporation.
FTA-145-DEP02	Depositional Soil	A depositional soil sample was collected at a low elevation area where surface water runoff could collect, and potentially percolate into the substratum or deposit suspended or dissolved materials after evaporation.
WS-145-SW/SD01	Surface Water Sediment	Surface water and sediment samples were collected upgradient (near 23rd Street bridge crossing South Branch Cane Creek) of the site in South Branch Cane Creek. The samples were collected to provide upstream data representative of baseline conditions upgradient.
FTA-100-SW/SD01	Surface Water Sediment	Surface water and sediment samples were collected in South Branch Cane Creek, west of the southern portion of the site.
FTA-100-SW/SD02	Surface Water Sediment	Surface water and sediment samples were collected in South Branch Cane Creek, west of the center portion of the site.
UST-48-MW01	Subsurface Soil	Subsurface soil sample was collected topographically downgradient (south) of the former 1,000-gallon heating oil UST. Sample data will determine if subsurface soil contamination exists from previous leaks or spills.
UST-48-GP01	Subsurface Soil	Soil boring for subsurface soil sample was placed topographically downgradient (southwest) of the 1,000-gallon heating oil UST. Sample data will indicate if subsurface soil contamination exists from previous leaks or spills.
UST-48-GP02	Subsurface Soil	Soil boring for subsurface soil sample was placed topographically upgradient (north-northeast) of the 1,000-gallon heating oil UST. Sample data will indicate if subsurface soil contamination exists upgradient of the current and former USTs.

SS - Surface and subsurface soil sample designator
W - Groundwater sample designator

Table 3-2

Surface Soil, Subsurface Soil, and Depositional Soil Sample Designations and QA/QC Samples
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft. bgs)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-145-GP01	FTA-145-GP01-DS-CY0001-REG	4-8				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP02 (SS)	FTA-145-GP02-SS-CY0002-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP02-DS-CY0003-REG	1-5				
FTA-145-GP03 (SS)	FTA-145-GP03-SS-CY0004-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP03-DS-CY0005-REG	5-8				
FTA-145-GP04 (SS)	FTA-145-GP04-SS-CY0006-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP04-DS-CY0007-REG	1-6				
FTA-145-GP05 (SS)	FTA-145-GP05-SS-CY0008-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP05-DS-CY0009-REG	5-8				
FTA-145-GP06 (SS)	FTA-145-GP06-SS-CY0010-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP06-DS-CY0013-REG	1-5				
FTA-145-GP07	FTA-145-GP07-SS-CY0014-REG	0-1			FTA-145-GP07-SS-CY0014-MS FTA-145-GP07-SS-CY0014-MSD	TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP07-DS-CY0015-REG	5-9				
FTA-145-GP08	FTA-145-GP08-SS-CY0016-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP08-DS-CY0017-REG	5-9	FTA-145-GP08-DS-CY0029-FD			
FTA-145-GP09 (SS)	FTA-145-GP09-SS-CY0018-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP09-DS-CY0019-REG	1-5				
FTA-145-GP10	FTA-145-GP10-SS-CY0020-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP10-DS-CY0021-REG	1-5	FTA-145-GP10-DS-CY0022-FD	FTA-145-GP10-DS-CY0023-FS		
FTA-145-GP11	FTA-145-GP11-DS-CY0024-REG	4-8				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP12	FTA-145-GP12-SS-CY0025-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP12-DS-CY0026-REG	5-7				
FTA-145-GP13	FTA-145-GP13-SS-CY0030-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP13-DS-CY0031-REG	1-2				
FTA-145-GP14	FTA-145-GP14-SS-CY0032-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-GP14-DS-CY0033-REG	1-2				
FTA-145-DEP01	FTA-145-DEP01-DEP-CY0027-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-DEP02	FTA-145-DEP02-DEP-CY0028-REG	0-1				TCL VOCs, TCL SVOCs, TAL Metals
UST-48-MW01	UST-48-MW01-DS-CJ0051-REG	8-11				BTEX, PAHS, and Pb
UST-48-GP01	UST-48-GP01-DS-CJ0052-REG	10-12	UST-48-GP01-DS-CJ0053-REG			BTEX, PAHS, and Pb
UST-48-GP02	UST-48-GP02-DS-CJ0054-REG	2-4				BTEX, PAHS, and Pb

FD - Field duplicate.
FS - Field split.
ft. bgs - feet below ground surface
MS/MSD - Matrix spike/matrix spike duplicate.
QA/QC - Quality assurance/quality control.
REG - Field sample.
TCL - Target compound list.
VOC - Volatile organic compound.
BTEX - Benzene, toluene, ethyl benzene, xylene.
PAH - Polycyclic aromatic hydrocarbon.
Pb - Lead.
UST-Underground storage tank.

included in Appendix A. The samples were analyzed for the parameters listed in Table 3-2 using methods outlined in Section 3.3.

3.1.2 Subsurface Soil Sampling

Subsurface soil samples were collected from 17 soil borings at the Former Motor Pool Area 1800/1900, as shown on Figure 3-1. Subsurface sampling locations and rationale are presented in Table 3-1. Subsurface soil sample designations, depths, and QA/QC samples are listed in Table 3-2. Soil boring sampling locations were determined in the field by the on-site geologist based on the sampling rationale, presence of surface structures, site topography, and buried and overhead utilities. IT contracted TEG, Inc., a direct-push technology subcontractor, to assist in subsurface soil sample collection.

Sample Collection. Subsurface soil samples were collected from soil borings at a depth greater than 1 foot below ground surface (bgs) in the unsaturated zone. The soil borings were advanced and the soil samples were collected using the direct-push sampling procedures specified in Section 4.9.1.1 of the SAP (IT, 2000a). Sample collection logs are included in Appendix A. The samples were analyzed for the parameters listed in Table 3-2 using methods outlined in Section 3.3.

Soil samples were collected continuously to 12 feet bgs or until direct-push sampler refusal was encountered. Subsurface soil samples were field screened using a PID in accordance with Section 4.7.1.1 of the SAP (IT, 2000a) to measure for volatile organic vapors. The sample displaying the highest reading was selected and sent to the laboratory for analysis; however, at those locations where PID readings were not greater than background, the deepest sample interval above the saturated zone was submitted for analyses. Samples to be analyzed for VOCs were collected directly from the sampler with three EnCore® samplers. The remaining portion of the sample was transferred to a clean stainless-steel bowl, homogenized, and placed in the appropriate sample containers. Samples submitted for laboratory analyses are summarized in Table 3-2. The on-site geologist at each borehole constructed a detailed lithological log. The Lithological Log for each borehole is included in Appendix B.

At the completion of soil sampling, boreholes were abandoned with bentonite chips and hydrated with potable water following borehole abandonment procedures summarized in Appendix B of the SAP (IT, 2000a).

3.1.3 Well Installation

Ten temporary wells and one permanent well (FTA-145-GP13) were installed in the residuum groundwater zone at the Former Motor Pool Area 1800/1900 to collect groundwater samples for laboratory analyses. The well/groundwater sample locations are shown on Figure 3-1. Table 3-3 summarizes the construction details of the wells installed at the Former Motor Pool Area 1800/1900. The well construction logs are included in Appendix B.

IT contracted Miller Drilling, Inc., to install the wells with a hollow-stem auger rig at the well/groundwater sample locations shown on Figure 3-1. IT attempted to install wells at the locations where direct-push soil samples were collected. However, at locations where this was not possible because of drill rig access issues or proximity to overhead and/or underground utilities, the temporary well location was offset from the soil boring location. The soil sampling location was identified with "(SS)," and the associated well location was identified with "(W)". The wells were installed following procedures outlined in Section 4.7 and Appendix C of the SAP (IT, 2000a). The boreholes at these locations were advanced with a 4.25-inch inside diameter (ID) hollow-stem auger from ground surface to the first water-bearing zone in residuum at the well location. The borehole was augered to the depth of direct-push sampler refusal, and samples were collected at the depth of direct-push refusal to the bottom of the borehole. A 2-foot long, 2-inch ID carbon steel split-spoon sampler was driven at 5-foot intervals to collect residuum for observing and describing lithology. Where split-spoon refusal was encountered, the auger was advanced until the first water bearing zone was encountered. The on-site geologist logging the auger boreholes continued the lithological log for each borehole from the depth of split-spoon refusal to the bottom of the auger borehole by logging the auger drill cuttings. The drill cuttings were logged to determine lithologic changes and the approximate depth of groundwater encountered during drilling. This information was used to determine the optimal placement of the monitoring well screen interval and to provide site-specific geologic and hydrogeologic information. The lithological log for each borehole is included in Appendix B.

Upon reaching the target depth at the temporary well locations, an 8-, 10-, or 15-foot length of 2-inch ID, 0.010-inch factory slotted, Schedule 40 polyvinyl chloride (PVC) screen with a 3-inch PVC end cap placed through the auger to the bottom of the borehole. The screen and end cap were attached to 2-inch ID, flush-threaded Schedule 40 PVC riser. A number 1 filter sand (environmentally safe, clean fine sand, sieve size 20 to 40) was tremied around the well screen to approximately 2 feet above the top of the well screen as the augers were removed. The wells

Table 3-3

Well Construction Summary
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Temporary Well	Northing	Easting	Ground Elevation (ft msl)	TOC Elevation (ft msl)	Well Depth (ft bgs)	Screen Length (ft)	Screen Interval (ft bgs)	Well Material
FTA-145-GP02(W)	1167859.91	670105.19	776.18	777.02	12.0	8	4.00 - 12.00	2" ID Sch. 40 PVC
FTA-145-GP03(W)	1167690.25	670261.98	779.51	779.67	20.0	15	4.75 - 19.75	2" ID Sch. 40 PVC
FTA-145-GP04(W)	1167551.42	670304.12	779.18	781.51	25.0	15	9.75 - 24.75	2" ID Sch. 40 PVC
FTA-145-GP05(W)	1167476.61	670220.94	775.81	779.10	17.0	10	6.75 - 16.75	2" ID Sch. 40 PVC
FTA-145-GP06(W)	1167740.68	670154.04	777.10	778.92	13.5	10	3.25 - 13.25	2" ID Sch. 40 PVC
FTA-145-GP07	1167450.55	670383.24	780.91	781.37	20.0	15	5.00 - 20.00	2" ID Sch. 40 PVC
FTA-145-GP08	1167702.85	670374.54	784.54	786.61	17.0	10	6.75 - 16.75	2" ID Sch. 40 PVC
FTA-145-GP09(W)	1167936.09	670271.64	787.69	788.76	24.0	15	9.00 - 24.00	2" ID Sch. 40 PVC
FTA-145-GP10	1168182.84	669894.36	775.49	777.73	12.9	10	2.90 - 12.90	2" ID Sch. 40 PVC
FTA-145-GP12	1168230.28	670106.19	784.99	786.27	18.0	10	7.75 - 17.75	2" ID Sch. 40 PVC
FTA-145-GP13	1168394.65	669807.56	758.27	760.74	14.5	5	9.50 - 14.50	2" ID Sch. 40 PVC

All temporary wells installed using a hollow-stem auger.
Horizontal coordinates were referenced to the U.S. State Plane Coordinate System, Alabama East Zone, North American Datum, 1983.
Elevations were referenced to the North American Vertical Datum of 1988.
2" ID Sch. 40 PVC - 2-inch inside diameter, Schedule 40, polyvinyl chloride.
bgs - Below ground surface.
ft - Feet
msl - Mean sea level.
TOC - Top of casing.
W - Temporary well/groundwater sampling location.

were surged approximately 10 minutes using a solid PVC surge block, or until no more settling of the filter sand occurred inside the borehole. A bentonite seal consisting of approximately 2 feet of bentonite chips was placed immediately on top of the filter sand, and hydrated with potable water. If the bentonite seal was installed below the water table surface, the bentonite chips were allowed to hydrate in the groundwater. The bentonite seal placement and hydration followed procedures in Appendix C of the SAP (IT, 2000a). A locking well cap was placed on the PVC well casing. The temporary well surface completion included attaching plastic sheeting around the PVC riser using duct tape. Additionally, sand bags were used to secure the sheeting to the ground surface around the temporary well.

At the permanent well location FTA-145-GP13, a 5-foot length of screen was used. Filter sand was tremied around the well screen to approximately 4 feet above the top of the well screen as the augers were removed. A 3-foot-thick bentonite layer was placed above the filter sand and hydrated with potable water. A cement-bentonite grout was tremied into the annular space from the top of the bentonite seal to the ground surface. A locking protective steel casing was placed over the PVC well and extended approximately 2 feet into the ground. A concrete well pad was constructed around the well. A locking well cap was placed on the PVC well riser.

IT attempted to install a second permanent monitoring well at the site; however, competent rock encountered at shallow depths prevented the well installation.

The wells were developed by surging and pumping with a 2-inch diameter submersible pump, in accordance with methodology outlined in Section 4.8 and Appendix C of the SAP (IT, 2000a). The submersible pump being used for well development was moved in an up-and-down fashion to encourage any residual well installation materials to enter the well. These materials were then pumped out of the well in order to re-establish the natural hydraulic flow conditions. Development was performed until the water turbidity was less than or equal to 20 nephelometric turbidity units (NTU) or for a maximum of 4 hours. The well development logs are included in Appendix C.

3.1.4 Water Level Measurements

The depth to groundwater was measured in all temporary, permanent, and existing monitoring wells installed at FTMC on March 13 and 14, 2000, following procedures outlined in Section 4.18 of the SAP (IT, 2000a). Depth to groundwater was measured with electronic water level meters. Each meter probe and cable were cleaned between use at each well following

decontamination methodology presented in Section 4.10 of the SAP (IT, 2000a). Measurements were referenced to the top of each well casing. A summary of groundwater level measurements for the Former Motor Pool Area 1800/1900 is presented in Table 3-4.

3.1.5 Groundwater Sampling

Groundwater was sampled from the ten temporary wells and one permanent well at the Former Motor Pool Area 1800/1900. The well/groundwater sampling locations are shown on Figure 3-1. The groundwater sampling locations and rationale are listed in Table 3-1. The groundwater sample designations and QA/QC samples are listed in Table 3-5.

Sample Collection. Groundwater sampling was performed at 11 well locations following procedures outlined in Section 4.9 of the SAP (IT, 2000a). Groundwater was sampled after purging a minimum of 3 well volumes and field parameters (i.e., including temperature, pH, specific conductivity, oxidation-reduction potential, and turbidity) stabilized. Purging and sampling were performed with a submersible pump or a peristaltic pump equipped with Teflon™ tubing. Field parameters were measured using a calibrated water quality meter. Field parameter readings are summarized in Table 3-6. Sample collection logs are included in Appendix A. The samples were analyzed for the parameters listed in Table 3-5 using methods outlined in Section 3.3.

3.1.6 Surface Water Sampling

Five surface water samples were collected at the Former Motor Pool Area 1800/1900 at the locations shown on Figure 3-1. The surface water sampling locations and rationale are listed in Table 3-1. The surface water sample designations and QA/QC samples are listed in Table 3-7. Surface water samples with a "WS" prefix were collected as part of the Watershed Screening Assessment (WSA) conducted at FTMC to characterize the general quality of FTMC surface water bodies and to determine whether they attain State designated use criteria (IT, 1998d). The sampling locations were determined in the field, based on drainage pathways and actual field observations.

Sample Collection. Surface water samples were collected in accordance with the procedures specified in Section 4.9.1.3 of the SAP (IT, 2000a). The surface water samples were collected by dipping a clean stainless-steel pitcher in the water, and pouring the water in the appropriate sample containers. Surface water samples were collected after field parameters had been

Table 3-4

Groundwater Elevations
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Well Location	Date	Depth to Water (ft BTOC)	Ground Elevation (ft msl)	Top of Casing Elevation (ft msl)	Groundwater Elevation (ft msl)
FTA-145-GP02(W)	13-Mar-00	0.95	776.18	777.02	776.07
FTA-145-GP03(W)	13-Mar-00	1.57	779.51	779.67	778.10
FTA-145-GP04(W)	13-Mar-00	5.29	779.18	781.51	776.22
FTA-145-GP05(W)	13-Mar-00	6.00	775.81	779.10	773.10
FTA-145-GP06(W)	13-Mar-00	3.00	777.10	778.92	775.92
FTA-145-GP07	13-Mar-00	5.69	780.91	781.37	775.68
FTA-145-GP08	13-Mar-00	6.33	784.54	786.61	780.28
FTA-145-GP09(W)	13-Mar-00	10.02	787.69	788.76	778.74
FTA-145-GP10	13-Mar-00	5.43	775.49	777.73	772.30
FTA-145-GP12	13-Mar-00	14.07	784.99	786.27	772.20
FTA-145-GP13	13-Mar-00	6.27	758.27	760.74	754.47
FTA-100-GP02	14-Mar-00	7.23	777.42	777.09	769.86
FTA-100-GP04	14-Mar-00	5.10	777.33	777.05	771.95
FTA-100-MW01	14-Mar-00	7.06	777.87	777.52	770.46
FTA-100-MW02	14-Mar-00	5.60	776.94	776.68	771.08
FTA-100-MW03	14-Mar-00	4.75	776.26	776.07	771.32
FTA-100-MW04	14-Mar-00	5.11	776.17	775.96	770.85
GSBP-152-MW01	14-Mar-00	6.34	763.93	763.68	757.34
GSBP-152-MW02	14-Mar-00	6.93	763.27	763.13	756.20
GSBP-152-MW03	14-Mar-00	4.42	763.87	763.79	759.37
GSBP-152-MW04	14-Mar-00	3.56	767.37	767.05	763.49
GSBP-152-MW05	14-Mar-00	8.02	768.83	771.81	763.79
GSBP-152-MW06	14-Mar-00	6.13	772.02	774.79	768.66
GSBP-152-MW07	14-Mar-00	5.30	772.04	774.49	769.19
GSBP-152-MW08	14-Mar-00	7.02	772.61	775.41	768.39
GSBP-152-MW09	14-Mar-00	8.50	772.45	775.27	766.77
GSBP-152-MW10	14-Mar-00	7.76	773.37	775.85	768.09
GSBP-152-MW11	14-Mar-00	5.20	771.80	774.33	769.13
GSBP-152-MW12	14-Mar-00	7.46	760.22	760.05	752.59
GSBP-152-MW13	14-Mar-00	6.55	760.03	759.42	752.87
GSBP-152-MW14	14-Mar-00	7.35	758.88	758.70	751.35
GSBP-157-MW01	14-Mar-00	7.82	789.11	791.19	783.37
GSBP-157-MW02	14-Mar-00	6.69	790.48	793.03	786.34
UST-49-MW01	13-Mar-00	1.71	783.82	783.52	781.81
UST-50-MW01	13-Mar-00	2.12	778.60	778.38	776.26
UST-51-MW01	13-Mar-00	11.02	793.29	793.06	782.04

Elevations referenced to the North American Vertical Datum of 1988.

BTOC - below top of casing.
ft - Feet.
msl - Mean sea level.
W - Temporary well/groundwater sampling location.

Table 3-5

Groundwater Sample Designations and QA/QC Samples
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	QA/QC Samples			Analytical Suite
		Field Duplicates	Field Splits	MS/MSD	
FTA-145-GP02 (W)	FTA-145-GP02-GW-CY3001-REG				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP03 (W)	FTA-145-GP03-GW-CY3002-REG[a]				TCL SVOCs, TAL Metals
	FTA-145-GP03-GW-CY3002R-REG				TCL VOCs
FTA-145-GP04 (W)	FTA-145-GP04-GW-CY3003-REG				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP05 (W)	FTA-145-GP05-GW-CY3004-REG				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP06 (W)	FTA-145-GP06-GW-CY3005-REG	FTA-145-GP06-GW-CY3006-FD	FTA-145-GP06-GW-CY3007-FS		TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP07	FTA-145-GP07-GW-CY3008-REG			FTA-145-GP07-GW-CY3008-MS FTA-145-GP07-GW-CY3008-MSD	TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP08	FTA-145-GP08-GW-CY3009-REG				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP09 (W)	FTA-145-GP09-GW-CY3010-REG				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP10	FTA-145-GP10-GW-CY3011-REG				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP12	FTA-145-GP12-GW-CY3012-REG				TCL VOCs, TCL SVOCs, TAL Metals
FTA-145-GP13	FTA-145-GP12-GW-CY3013-REG				TCL VOCs, TCL SVOCs, TAL Metals

Groundwater samples were collected from the approximate midpoint of the saturated screened interval of the monitoring well.

FD - Field duplicate.
FS - Field split.
ft. bgs - feet below ground surface.
MS/MSD - Matrix spike/matrix spike duplicate.
QA/QC - Quality assurance/quality control.
REG - Field sample.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target compound list.
VOC - Volatile organic compound.

[a] Groundwater volume insufficient to collect samples for all analytical parameters.

Table 3-6

Groundwater and Surface Water Field Parameters
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Date	Media	Specific Conductivity (mS/cm)[a]	Dissolved Oxygen (mg/L)	Oxidation Reduction Potential (mV)	Temperature (^{o}C)	Turbidity (NTUs)	pH (SU)
FTA-145-GP02(W)	07-JAN-99	GW	4.00	6.13	122.00	17.48	>1000	6.36
FTA-145-GP03(W)[b]	04-JAN-99	GW	0.260	0.26	-88.00	17.48	>1000	7.16
FTA-145-GP03(W)[c]	28-JUN-99	GW	0.323	0.15	-103.00	21.18	8.8	7.08
FTA-145-GP04(W)	04-JAN-99	GW	0.365	0.07	-127.00	19.17	52.0	7.10
FTA-145-GP05(W)	17-DEC-98	GW	0.344	2.08	-48.00	18.20	477.8	7.47
FTA-145-GP06(W)	12-JAN-99	GW	0.603	1.09	45.00	16.78	>1000	6.72
FTA-145-GP07	17-DEC-98	GW	0.476	0.76	-67.00	20.15	15.9	7.18
FTA-145-GP08	07-JAN-99	GW	0.328	0.43	-74.00	20.50	>1000	7.36
FTA-145-GP09(W)	04-JAN-99	GW	0.338	0.19	-63.00	18.55	167.9	6.94
FTA-145-GP10	18-DEC-98	GW	0.287	1.46	174.00	17.91	37.7	6.27
FTA-145-GP12	18-DEC-98	GW	0.168	2.62	195.00	18.56	612.4	6.26
FTA-145-GP13	06-JAN-00	GW	0.454	0.65	IM	14.00	15.2	7.15
FTA-145-SW/SD01	27-JAN-99	SW	0.239	12.07	NR	14.82	6.7	7.44
FTA-145-SW/SD02	27-JAN-99	SW	2.09	11.76	NR	12.40	5.6	7.54
FTA-100-SW/SD01	26-Jan-99	SW	0.148	11.41	NR	14.19	3.8	7.37
FTA-100-SW/SD02	26-Jan-99	SW	0.148	11.41	NR	14.19	3.8	7.37
WS-145-SW/SD01	27-JAN-99	SW	0.249	11.75	NR	14.93	2.7	7.44

[a]Specific conductivity values standardized to millisiemens per centimeter.
[b]Well sampled for semivolatile organic compounds and metals.
[c]Well sampled for volatile organic compounds.
^{o}C - Degrees Celsius.
GW - Groundwater.
mg/L - Milligrams per liter.
mS/cm - Millisiemens per centimeter.
mV - Millivolts.
NR - Not recorded.
NTUs - Nephtholometric turbidity units.
SU - Standard units.
SW - Surface water.
IM - Instrument malfunction.
W - Temporary well/groundwater sampling location.

Table 3-7

Surface Water and Sediment Sample Designations and QA/QC Samples
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft. bgs)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-145-SW/SD01	FTA-145-SW/SD01-SW-CY2001-REG	NA				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-SW/SD01-SD-CY1001-REG	0-1.5				TOC, Grain Size (sediment only)
FTA-145-SW/SD02	FTA-145-SW/SD02-SW-CY2002-REG	NA				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-145-SW/SD02-SD-CY1002-REG	0-0.5	FTA-145-SW/SD02-SD-CY1003-FD	FTA-145-SW/SD02-SD-CY1004-FS		TOC, Grain Size (sediment only)
WS-145-SW/SD01	WS-145-SW/SD01-SW-WS2002-REG	NA				TCL VOCs, TCL SVOCs, TAL Metals
	WS-145-SW/SD01-SD-WS1002-REG	0-1.0				TOC, Grain Size (sediment only)
FTA-100-SW/SD01	FTA-100-SW/SD01-SW-CV2001-REG	NA				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-100-SW/SD01-SD-CV1001-REG	0-2.0				TOC, Grain Size (sediment only)
FTA-100-SW/SD02	FTA-100-SW/SD02-SW-CV2002-REG	NA				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-100-SW/SD02-SD-CV1002-REG	0-1.0				TOC, Grain Size (sediment only)

FD - Field duplicate.
FS - Field split.
ft. bgs - feet below ground surface.
MS/MSD - Matrix spike/matrix spike duplicate.
QA/QC - Quality assurance/quality control.
REG - Field sample.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target compound list.
TOC - Total organic carbon.
VOC - Volatile organic compound.

measured using a calibrated water quality unit. Surface water field parameters are listed in Table 3-6. Sample collection logs are included in Appendix A. The samples were analyzed for the parameters listed in Table 3-7 using methods outlined in Section 3.3.

3.1.7 Sediment Sampling

Five sediment samples were collected at the same locations as the surface water samples presented in Section 3.1.6. The locations of the sediment samples collected are shown on Figure 3-1. Sediment sampling locations and rationale are presented in Table 3-1. The sediment sample designations and QA/QC samples are listed in Table 3-7. Sediment samples with a "WS" prefix were collected as part of the WSA conducted at FTMC to characterize the general quality of FTMC surface water bodies and to determine whether they attain State designated use criteria (IT, 1998d). The actual sediment sampling locations were determined in the field based on drainage pathways and actual field observations.

Sample Collection. Sediment samples were collected in accordance with the procedures specified in Section 4.9.1.2 of the SAP (IT, 2000a). Sediments were collected with a stainless-steel spoon and placed in a stainless-steel bowl. Samples for VOC analyses were then immediately collected from the bowl with three EnCore® samplers. The remaining portion of the sample was homogenized and placed in the appropriate sample containers. Sample collection logs are included in Appendix A. The sediment samples were analyzed for the parameters listed in Table 3-7 using methods outlined in Section 3.3.

3.2 Surveying of Sample Locations

Sample locations were surveyed using global positioning system (GPS) survey techniques described in Section 4.3 of the SAP (IT, 2000a), and conventional civil survey techniques described in Section 4.19 of the SAP. Horizontal coordinates were referenced to the U.S. State Plane Coordinate System, Alabama East Zone, North American Datum, 1983. Elevations were referenced to the North American Vertical Datum of 1988. Horizontal coordinates and elevations are included in Appendix D.

3.3 Analytical Program

Samples collected during the SI were analyzed for various physical and chemical properties. The specific suite of analyses performed is based on the PSSCs historically at the site and EPA,

ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Former Motor Pool Area 1800/1900 included the following parameters:

- Target compound list VOCs–EPA Method 5035/8260B
- Target compound list semivolatile organic compounds (SVOC)–EPA Method 8270C
- Target analyte list metals–EPA Method 6010B/7000
- Benzene, toluene, ethyl benzene, and xylene (BTEX)–EPA Method 8021B
- PAHs–EPA Method 8310
- Total organic carbon (TOC)–EPA Method 9060 (sediment only)
- Grain size–American Society for Testing and Materials D421/D422 (sediment only).

The samples were analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 6-1 in Appendix B of the SAP (IT, 2000a). Data were reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of Appendix B of the SAP [IT, 2000a]). Chemical data were reported via hard copy data packages by the laboratory using Contract Laboratory Program-like forms. These packages were validated in accordance with EPA National Functional Guidelines by Level III criteria. A summary of validated data is included in Appendix E. The Data Validation Summary Report is included as Appendix F.

3.4 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping followed requirements specified in Section 4.13.2 of the SAP (IT, 2000a). Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SI are listed in Section 5.0, Table 5-1, of Appendix B of the SAP. Sample documentation and chain-of-custodies were recorded as specified in Section 4.13 of the SAP.

Completed analysis request and chain-of-custody records (Appendix A), were secured and included with each shipment of sample coolers to Quanterra Environmental Services in Knoxville, Tennessee. Split samples were shipped to USACE South Atlantic Division Laboratory in Marietta, Georgia.

3.5 Investigation-Derived Waste Management and Disposal

Investigation-derived waste (IDW) was managed and disposed as outlined in Appendix D of the SAP (IT, 2000a). The IDW generated from the field sampling at the Former Motor Pool Area

1800/1900 was segregated as follows:

- Drill cuttings,
- Purge water from well development and sampling activities, and decontamination fluids, and
- Personal protective equipment (PPE).

Solid IDW was stored inside the fenced area surrounding Buildings 335 and 336 in lined rolloff bins prior to characterization and final disposal. Solid IDW was characterized using toxicity characteristic leaching procedure analyses. Based on the results, drill cuttings and PPE generated during the SI at the Former Motor Pool Area 1800/1900 were disposed as nonregulated waste at the Industrial Waste Landfill on the Main Post of FTMC.

Liquid IDW was contained in the existing 20,000-gallon sump associated with the Building T-338 vehicle washrack. Liquid IDW was characterized by VOC, SVOC, and metals analyses. Based on the analyses, liquid IDW was discharged as nonregulated waste to the FTMC wastewater treatment plant on the Main Post.

3.6 Variances/Nonconformances

3.6.1 Variances

Six variances to the SFSP were recorded during completion of the SI at the Former Motor Pool Area 1800/1900. The variances did not alter the intent of the investigation or the sampling rationale presented in Table 4-2 of the SFSP (IT, 1998a). The variances to the SFSP are summarized in Table 3-8 and included in Appendix G.

3.6.2 Nonconformances

There were not any nonconformances to the SFSP recorded during completion of the SI at the Former Motor Pool Area 1800/1900.

3.7 Data Quality

The field sample data are presented in tabular form in Appendix E. The field samples were collected, documented, handled, analyzed, and reported in a manner consistent with the SI work plan; the FTMC SAP and QAP; and standard, accepted methods and procedures. Sample

Table 3-8

Variances to the Site-Specific Field Sampling Plan
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Variance to the SFSP	Justification for Variance	Impact to Site Investigation
Direct-push wells not installed: FTA-145-GP02, FTA-145-GP03, FTA-145-GP04, FTA-145-GP05, FTA-145-GP06, FTA-145-GP07, FTA-145-GP08, FTA-145-GP09, FTA-145-GP10, FTA-145-GP12. Wells were installed with a hollow stem auger rig.	Groundwater was not encountered during direct-push drilling.	None.
Temporary well FTA-145-GP03 was relocated approximately 50 feet east of direct-push soil boring FTA-145-GP03.	Competent bedrock was encountered at 11.0 feet below ground surface (bgs) and groundwater was not present.	Relocation of FTA-145-GP03 allowed completion of well for development and sampling.
Temporary well FTA-145-GP04 was relocated approximately 70 feet east of direct-push soil boring FTA-145-GP04.	Competent bedrock was encountered at 11.0 feet bgs, and groundwater was not present.	Relocation of FTA-145-GP04 allowed completion of well for development and sampling.
Temporary wells FTA-145-GP02, FTA-145-GP05, FTA-145-GP06, and FTA-145-GP09 were relocated approximately 10 to 30 feet from direct-push soil boring locations.	Hollow stem auger rig could not access soil boring sites FTA-145-GP02, FTA-145-GP05, FTA-145-GP06, and FTA-145-GP09 because of overhead power lines and underground utility lines.	Relocation of FTA-145-GP02, FTA-145-GP05, FTA-145-GP06, and FTA-145-GP09 allowed completion of wells for development and sampling.
Locations FTA-145-GP13 and FTA-145-GP14 were added per USACE request. Unable to install a permanent monitoring well and collect a groundwater sample at FTA-145-GP14.	During several drilling attempts competent bedrock was encountered and water was not present.	A groundwater sample was not collected at location FTA-145-GP14 and a permanent monitoring well was not installed.
Unable to install UST-48-MW01 and collect groundwater sample.	Competent bedrock was encountered and groundwater was not present during several attempts to drill and install UST-48-MW01.	A groundwater sample was not obtained at Parcel 48(7).

collection logs pertaining to the collection of these samples were reviewed and organized for this report and are included in Appendix A. As discussed in Section 3.6, there were six variances to the SFSP during the SI. However, these variances did not impact the usability of the data.

Data Validation. A complete (100 percent) Level III data validation effort was performed on the reported analytical data. Appendix F consists of a data validation summary report that was prepared to discuss the results of the validation. Selected results were rejected or otherwise qualified based on the implementation of accepted data validation procedures and practices. These qualified parameters are highlighted in the report. The validation-assigned qualifiers were added to the FTMC IT Environmental Management System™ database for tracking and reporting. The qualified data were used in the comparison to the SSSLs and ESVs. Rejected data (assigned an 'R' qualifier) were not used in the comparison to SSSLs and ESVs.

The data presented in this report, except where qualified, meet the principle data quality objective for this SI.

4.0 Site Characterization

Subsurface investigations performed at the Former Motor Pool Area 1800/1900 provided soil, geologic, and groundwater data. These data were used to characterize the geology and hydrogeology of the site.

4.1 Regional and Site Geology

4.1.1 Regional Geology

Calhoun County includes parts of two physiographic provinces, the Piedmont Upland Province and the Valley and Ridge Province. The Piedmont Upland Province occupies the extreme eastern and southeastern portions of the county and is characterized by metamorphosed sedimentary rocks. The generally accepted range in age of these metamorphics is Cambrian to Devonian.

The majority of Calhoun County, including the Main Post of FTMC, lies within the Appalachian fold and thrust structural belt (Valley and Ridge Province) where southeastward-dipping thrust faults with associated minor folding are the predominant structural features. The fold and thrust belt consists of Paleozoic sedimentary rocks that have been asymmetrically folded and thrust-faulted with major structures and faults striking in a northeast-southwest direction.

Northwestward transport of the Paleozoic rock sequence along the thrust faults has resulted in the imbricate stacking of large slabs of rock referred to as thrust sheets. Within an individual thrust sheet, smaller faults may splay off the larger thrust fault, resulting in imbricate stacking of rock units within an individual thrust sheet (Osborne and Szabo, 1984). Geologic contacts in this region generally strike parallel to the faults and repetition of lithologic units is common in vertical sequences. Geologic formations within the Valley and Ridge Province portion of Calhoun County have been mapped by Warman and Causey (1962), Osborne and Szabo (1984), and Moser and DeJarnette (1992), and vary in age from Lower Cambrian to Pennsylvanian.

The basal unit of the sedimentary sequence in Calhoun County is the Cambrian Chilhowee Group. The Chilhowee Group is comprised of the Cochran, Nichols, Wilson Ridge, and Weisner Formations (Osborne and Szabo, 1984), but in Calhoun County is either undifferentiated or divided into the Cochran and Nichols Formations and an upper undifferentiated Wilson Ridge

and Weisner Formation. The Cochran is composed of poorly sorted arkosic sandstone and conglomerate with interbeds of greenish-gray siltstone and mudstone. Massive to laminated, greenish-gray and black mudstone makes up the Nichols Formation with thin interbeds of siltstone and very fine-grained sandstone (Szabo et al., 1988). These two formations are mapped only in the eastern part of the county.

The Wilson Ridge and Weisner Formations are undifferentiated in Calhoun County and consist of both coarse-grained and fine-grained clastics. The coarse-grained facies appear to dominate the unit and consist primarily of coarse-grained, vitreous quartzite, and friable, fine- to coarse-grained, orthoquartzitic sandstone, both of which locally contain conglomerate. The fine-grained facies consist of sandy and micaceous shale and silty, micaceous mudstone, which are locally interbedded with the coarse clastic rocks. The abundance of orthoquartzitic sandstone and quartzite suggests that most of the Chilhowee Group bedrock in the vicinity of FTMC belongs to the Weisner Formation (Osborne and Szabo, 1984).

The Cambrian Shady Dolomite overlies the Weisner Formation northeast, east, and southwest of the Main Post, and consists of interlayered bluish-gray or pale yellowish-gray sandy dolomitic limestone and siliceous dolomite with coarsely crystalline porous chert (Osborne et al., 1989). A variegated shale and clayey silt have been included within the lower part of the Shady Dolomite (Cloud, 1966). Material similar to this lower shale unit was noted in core holes drilled by the Alabama Geologic Survey on FTMC (Osborne and Szabo, 1984). The character of the Shady Dolomite in the FTMC vicinity and the true assignment of the shale at this stratigraphic interval are still uncertain (Osborne, 1999).

The Rome Formation overlies the Shady Dolomite and locally occurs to the northwest and southeast of the Main Post as mapped by Warman and Causey (1962) and Osborne and Szabo (1984), and immediately to the west of Reilly Airfield (Osborne and Szabo, 1984). The Rome Formation consists of variegated thinly interbedded grayish-red-purple mudstone, shale, siltstone, and greenish-red and light gray sandstone, with locally occurring limestone and dolomite. The Conasauga Formation overlies the Rome Formation, and occurs along anticlinal axes in the northeastern portion of Pelham Range (Warman and Causey, 1962), (Osborne and Szabo, 1984) and the northern portion of the Main Post (Osborne et al., 1997). The Conasauga Formation is composed of dark-gray, finely to coarsely crystalline medium- to thick-bedded dolomite with minor shale and chert (Osborne et al., 1989).

Overlying the Conasauga Formation is the Knox Group, which is composed of the Copper Ridge and Chepultepec dolomites of Cambro-Ordovician age. The Knox Group is undifferentiated in Calhoun County and consists of light medium gray, fine to medium crystalline, variably bedded to laminated, siliceous dolomite and dolomitic limestone that weathers to a chert residuum (Osborne and Szabo, 1984). The Knox Group underlies a large portion of the Pelham Range area.

The Ordovician Newala and Little Oak Limestones overlie the Knox Group. The Newala Limestone consists of light to dark gray, micritic, thick-bedded limestone with minor dolomite. The Little Oak Limestone is comprised of dark gray, medium- to thick-bedded, fossiliferous, argillaceous to silty limestone with chert nodules. These limestone units are mapped together as undifferentiated at FTMC and other parts of Calhoun County. The Athens Shale overlies the Ordovician limestone units. The Athens Shale consists of dark-gray to black shale and graptolitic shale with localized interbedded dark gray limestone (Osborne et al., 1989). These units occur within an eroded "window" in the uppermost structural thrust sheet at FTMC and underlie much of the developed area of the Main Post.

Other Ordovician-aged bedrock units mapped in Calhoun County include the Greensport Formation, Colvin Mountain Sandstone, and Sequatchie Formation. These units consist of various siltstones, sandstones, shales, dolomites and limestones, and are mapped as one, undifferentiated unit in some areas of Calhoun County. The only Silurian-age sedimentary formation mapped in Calhoun County is the Red Mountain Formation. This unit consists of interbedded red sandstone, siltstone, and shale with greenish-gray to red silty and sandy limestone.

The Devonian Frog Mountain Sandstone consists of sandstone and quartzitic sandstone with shale interbeds, dolomudstone, and glauconitic limestone (Szabo et al., 1988). This unit locally occurs in the western portion of Pelham Range.

The Mississippian Fort Payne Chert and the Maury Formation overlie the Frog Mountain Sandstone and are composed of dark- to light-gray limestone with abundant chert nodules and greenish-gray to grayish-red phosphatic shale with increasing amounts of calcareous chert toward the upper portion of the formation (Osborne and Szabo, 1984). These units occur in the

northwestern portion of Pelham Range. Overlying the Fort Payne Chert is the Floyd Shale, also of Mississippian age, which consists of thin-bedded, fissile brown to black shale with thin intercalated limestone layers and interbedded sandstone. Osborne and Szabo (1984) reassigned the Floyd Shale, which was mapped by Warman and Causey (1962) on the Main Post of FTMC, to the Ordovician Athens Shale on the basis of fossil data.

The Jacksonville Thrust Fault is the most significant structural geologic feature in the vicinity of FTMC, both for its role in determining the stratigraphic relationships in the area and for its contribution to regional water supplies. The trace of the fault extends northeastward for approximately 39 miles between Bynum, Alabama and Piedmont, Alabama. The fault is interpreted as a major splay of the Pell City Fault (Osborne and Szabo, 1984). The Ordovician sequence comprising the Eden thrust sheet is exposed at FTMC through an eroded "window" or "fenster" in the overlying thrust sheet. Rocks within the window display complex folding with the folds being overturned, and tight to isoclinal. The carbonates and shales locally exhibit well-developed cleavage (Osborne and Szabo, 1984). The FTMC window is framed on the northwest by the Rome Formation, north by the Conasauga Formation, northeast, east, and southwest by the Shady Dolomite, and southeast and southwest by the Chilhowee Group (Osborne et al., 1997).

4.1.2 Site Geology

Soils underlying the Former Motor Pool Area 1800/1900 are mapped as Anniston and Allen gravelly loams of the Anniston-Allen Series (USDA, 1961). The Anniston and Allen Series of soils consist of strongly acid, deep, well drained soils that have developed in old local alluvium. Sandstone and quartzite gravel and cobbles, as much as 8 inches in diameter, are on the surface and throughout the soil. The depth to bedrock ranges from 2 feet bgs to greater than 10 feet bgs. The typical soil description is 2 to 10 feet of well-drained stony loam to clay loam over stratified local alluvium, limestone, or shale.

This unit consists of friable soils that have developed in old alluvium on foot slopes and along the base of mountains. The color of the surface soil ranges from very dark brown and dark brown to reddish brown and dark reddish brown. The texture of subsoil ranges from light clay loam to clay or silty clay loam. The alluvium ranges in thickness from 2 feet to more than 8 feet. Infiltration and runoff are medium, permeability is moderate, and the capacity for available moisture is high. Organic matter is moderately low.

Bedrock beneath the Former Motor Pool Area 1800/1900 is mapped as the Ordovician/Mississippian Athens Shale, and Floyd Shale, undifferentiated, and the Ordovician Little Oak and Newala Limestones. A contact between the shale and limestone units is mapped striking southwest to northeast through the northern end of the site. A geologic map of the site is presented in Figure 4-1. These units occur within the eroded "window" in the uppermost structural thrust sheet at FTMC and underlie much of the developed area of the Main Post.

A geologic cross section was constructed with boring log data from the Former Motor Pool Area 1800/1900 and is presented on Figure 4-2. Based on the cross section and direct-push and hollow-stem auger boring data collected during the SI, residuum beneath the Former Motor Pool Area 1800/1900 consists of predominantly silt and clay overlying weathered shale. The weathered shale is encountered from 5 to 15 feet bgs at the Former Motor Pool Area 1800/1900. Based on auger refusal, competent shale was encountered at FTA-145-GP02, FTA-145-GP05, FTA-145-GP07, and FTA-145-GP10. The geologic cross section location is shown on Figure 3-1.

4.2 Site Hydrology

4.2.1 Surface Hydrology

Precipitation in the form of rainfall averages about 54 inches annually in Anniston, Alabama, with infiltration rates annually exceeding evapotranspiration rates. The major surface water features at the Main Post of FTMC include Remount Creek, Cane Creek, and Cave Creek. These waterways flow in a general northwest to westerly direction towards the Coosa River on the western boundary of Calhoun County.

Surface runoff at the Former Motor Pool Area 1800/1900 follows site topography and generally flows to the west-southwest towards South Branch of Cane Creek, which is located approximately 225 feet west of the site. South Branch of Cane Creek flows to the northwest and eventually discharges into Cane Creek.

4.2.2 Hydrogeology

During boring and well installation activities, groundwater was generally encountered within the weathered shale at depths ranging from 8 to 15 feet bgs, approximately 1 foot to more than 10

feet above the top of competent bedrock. However, moist clay soil was logged at FTA-145-GP06, FTA-145-GP07, and FTA-145-GP12.

Static groundwater levels were measured in the temporary wells installed at the Former Motor Pool Area 1800/1900 on March 13, 2000. Table 3-4 summarizes measured groundwater elevations at the Former Motor Pool Area 1800/1900. A groundwater elevation map was constructed from the March 2000 data and is shown on Figure 4-3. Groundwater flow is to the west-southwest, toward South Branch Cane Creek, and to the northwest, in the direction of surface water flow in South Branch Cane Creek. The hydraulic gradient across the site is approximately 0.03 feet per foot.

Static groundwater levels summarized in Table 3-4 range from nearly the same to 10 feet above the depth to water data from the boring logs (Appendix B). This indicates that the groundwater is under unconfined to semiconfined conditions.

5.0 Summary of Analytical Results

The results of the chemical analyses of samples collected at the Former Motor Pool Area 1800/1900 indicate that metals, VOCs, and SVOCs have been detected in the various site media. To evaluate whether the detected constituents present an unacceptable risk to human health and the environment, analytical results were compared to the human health SSSLs and ESVs for FTMC. The SSSLs and ESVs were developed by IT for human health and ecological risk evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC.

Metal concentrations exceeding the SSSLs and ESVs were subsequently compared to background metals screening values (SAIC, 1998) to determine if the metals concentrations are within natural background concentrations. Summary statistics for background metals samples collected at FTMC (SAIC, 1998) are included in Appendix H. Additionally, SVOC concentrations in surface soils that exceeded the SSSLs and ESVs were compared to PAH background screening values, where available. The PAH background screening values were derived from PAH analytical data from 18 parcels at FTMC that were determined to represent anthropogenic activity (IT, 2000b). PAH background screening values were developed for two categories of surface soils: beneath asphalt and adjacent to asphalt. The PAH background screening values for soils adjacent to asphalt are the more conservative (i.e. lower) of the PAH background values, and are the values used herein for comparison.

Six compounds were quantified by both SW-846 Method 8260B (as VOC) and Method 8270C (as SVOC), including 1,2,4-trichlorobenzene, 1,4-dichlorobenzene, 1,3-dichlorobenzene, 1,2-dichlorobenzene, hexachlorobutadiene, and naphthalene. Method 8260B yields a reporting limit (RL) of 0.005 milligrams per kilogram (mg/kg), while Method 8270C has a RL of 0.330 mg/kg, which is typical for a soil matrix sample. Because of the direct nature of the Method 8260B analysis and its resulting lower RL, this method should be considered superior to Method 8270C when quantifying low levels (0.005 to 0.330 mg/kg) of these compounds. Method 8270C and its associated methylene chloride extraction step is superior, however, when dealing with samples that contain higher concentrations (greater than 0.330 mg/kg) of these compounds. Therefore, all data were considered and none were categorically excluded. Data validation qualifiers were helpful in evaluating the usability of data, especially if calibration, blank contamination, precision, or accuracy indicator anomalies were encountered. The validation qualifiers and

concentrations reported (e.g., whether concentrations were less than or greater than 0.330 mg/kg) were used to determine which analytical method was likely to return the more accurate result.

The following sections and Tables 5-1 through 5-5 summarize the results of the comparison of detected constituents to the SSSLs, ESVs, and background screening values. Complete analytical results are presented in Appendix E.

5.1 Surface and Depositional Soil Analytical Results

Twelve surface soil samples and two depositional soil samples were collected for chemical analyses at the Former Motor Pool Area 1800/1900. Surface and depositional soil samples were collected from the upper 1 foot of soil at the locations shown on Figure 3-1. Analytical results were compared to residential human health SSSLs, ESVs, and background screening values, as presented in Table 5-1.

Metals. Twenty-one metals were detected in surface and depositional soil samples collected at the Former Motor Pool Area 1800/1900. Aluminum, arsenic, calcium, chromium, iron, lead, manganese, and zinc were present in each of the samples.

The concentrations of seven metals (aluminum, arsenic, cadmium, chromium, iron, manganese, and thallium) exceeded residential human health SSSLs. With the exception of iron (FTA-145-GP07 and FTA-145-GP08), cadmium (FTA-145-GP10), chromium (FTA-145-GP03), and manganese (FTA-145-DEP01), the metals concentrations were below their respective background concentration. The iron, chromium, and manganese results were within the range of background values (Appendix H).

The following metals were detected at concentrations exceeding ESVs and their respective background concentration: beryllium (four locations), cadmium (one location), chromium (one location), copper (one location), iron (two locations), lead (five locations), manganese (one location), nickel (two locations), selenium (two locations), and zinc (six locations).

Volatile Organic Compounds. Fourteen VOCs were detected in surface and depositional soil samples collected at the Former Motor Pool Area 1800/1900. The methylene chloride results and all but one of the 2-butanone results were flagged with a “B” data qualifier, signifying that these compounds were also detected in an associated laboratory or field blank sample.

Table 5-1

Surface Soil and Depositional Soil Analytical Results
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Parcel					FTA-145-DEP01					FTA-145-DEP02					FTA-145-GP02					FTA-145-GP03					FTA-145-GP04				
Sample Location					FTA-145					FTA-145					FTA-145					FTA-145					FTA-145				
Sample Number					CY0027					CY0028					CY0002					CY0004					CY0006				
Sample Date					9-Nov-98					9-Nov-98					1-Oct-98					1-Oct-98					1-Oct-98				
Sample Depth (Feet)					0- 1					0- 1					0- 1					0- 1					0- 1				
Parameter	Units	BKG[a]	SSSL[b]	ESV[b]	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS																												
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E+01	1.59E+04			YES	YES	2.43E+03				YES	1.36E+03				YES	3.56E+03				YES	4.05E+03				YES
Antimony	mg/kg	1.99E+00	3.11E+00	3.50E+00	ND					ND					ND					ND					ND				
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	6.70E+00			YES		1.80E+00			YES		1.30E+00			YES		1.10E+00			YES		2.10E+00			YES	
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	1.01E+02					4.65E+01					ND					2.86E+01	J				7.43E+01	J			
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	7.90E-01					ND					ND					ND					ND				
Cadmium	mg/kg	2.90E-01	6.25E+00	1.60E+00	ND					ND					ND					ND					ND				
Calcium	mg/kg	1.72E+03	NA	NA	3.46E+03		YES			2.25E+03		YES			2.95E+04	J	YES			2.95E+04	J	YES			6.15E+04	J	YES		
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	1.68E+01				YES	7.60E+00				YES	1.14E+01				YES	6.27E+01		YES	YES	YES	1.87E+01				YES
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	1.29E+01					ND					ND					ND					ND				
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	2.83E+01		YES			8.50E+00					ND					7.20E+00					1.20E+01				
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	2.57E+04			YES	YES	7.02E+03			YES	YES	3.96E+03			YES	YES	5.03E+03			YES	YES	8.12E+03			YES	YES
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	1.07E+02		YES		YES	2.12E+01					3.60E+00	J				1.28E+02	J	YES		YES	1.39E+02	J	YES		YES
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	1.50E+03		YES			ND					1.67E+04	J	YES			1.31E+04	J	YES			2.87E+03	J	YES		
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	1.76E+03		YES	YES	YES	2.91E+02				YES	1.33E+02				YES	1.75E+02				YES	1.26E+02				YES
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	9.10E-02		YES			ND					ND					ND					ND				
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	3.67E+01		YES		YES	ND					5.60E+00					4.80E+00					6.70E+00				
Potassium	mg/kg	8.00E+02	NA	NA	6.83E+02					ND					ND					ND					ND				
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	ND					ND					ND					ND					ND				
Thallium	mg/kg	3.43E+00	5.08E-01	1.00E+00	ND					ND					ND					ND					ND				
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	2.55E+01				YES	ND					1.75E+01				YES	1.26E+01				YES	8.40E+00				YES
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	4.39E+01		YES			2.21E+01					7.00E+00					8.66E+01		YES		YES	8.59E+01		YES		YES
VOLATILE ORGANIC COMPOUNDS																												
1,2,4-Trimethylbenzene	mg/kg	NA	3.88E+02	1.00E-01	3.90E-03	J				ND					3.60E-03	J				ND					ND				
1,2-Dimethylbenzene	mg/kg	NA	1.55E+04	5.00E-02	ND					ND					ND					ND					ND				
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	5.40E-02	J				9.40E-03	B				4.10E-03	B				6.30E-03	B				ND				
Acetone	mg/kg	NA	7.76E+02	2.50E+00	6.00E-01	J				1.50E-01	J				3.00E-02	B				9.60E-01	B				ND				
Bromomethane	mg/kg	NA	1.09E+01	NA	3.60E-03	J				ND					ND					ND					ND				
Carbon disulfide	mg/kg	NA	7.77E+02	9.00E-02	2.30E-03	J				ND					4.30E-03	J				ND					ND				
Cumene	mg/kg	NA	7.77E+02	NA	ND					ND					ND					ND					ND				
Ethylbenzene	mg/kg	NA	7.77E+02	5.00E-02	ND					ND					ND					ND					ND				
Methylene chloride	mg/kg	NA	8.41E+01	2.00E+00	5.10E-03	B				4.20E-03	B				4.90E-03	B				4.90E-03	B				5.10E-03	B			
Naphthalene	mg/kg	3.30E-02	1.55E+02	1.00E-01	ND					ND					3.50E-03	J				ND					ND				
Toluene	mg/kg	NA	1.55E+03	5.00E-02	4.40E-03	J				ND					7.80E-03					ND					ND				
Trichlorofluoromethane	mg/kg	NA	2.33E+03	1.00E-01	ND					ND					ND					ND					5.30E-03	J			
m,p-Xylenes	mg/kg	NA	1.55E+04	5.00E-02	ND					ND					4.90E-03	J				ND					ND				
p-Cymene	mg/kg	NA	1.55E+03	NA	ND					ND					ND					ND					ND				
SEMIVOLATILE ORGANIC COMPOUNDS																												
Acenaphthylene	mg/kg	8.91E-01	4.63E+02	6.82E+02	8.40E-02	J				1.00E-01	J				ND					5.00E-01	J				ND				
Anthracene	mg/kg	9.35E-01	2.33E+03	1.00E-01	8.60E-02	J				9.00E-02	J				ND					4.10E-01	J			YES	ND				
Benzo(a)anthracene	mg/kg	1.19E+00	8.51E-01	5.21E+00	4.30E-02	J				1.40E-01	J				ND					1.30E+00	J	YES	YES		2.00E-01	J			
Benzo(a)pyrene	mg/kg	1.42E+00	8.51E-02	1.00E-01	6.70E-02	J				1.80E-01	J		YES	YES	ND					1.50E+00	J	YES	YES	YES	2.50E-01	J		YES	YES
Benzo(b)fluoranthene	mg/kg	1.66E+00	8.51E-01	5.98E+01	8.70E-02	J				1.80E-01	J				ND					1.40E+00	J		YES		1.90E-01	J			
Benzo(ghi)perylene	mg/kg	9.55E-01	2.32E+02	1.19E+02	6.40E-02	J				1.10E-01	J				ND					6.30E-01	J				ND				
Benzo(k)fluoranthene	mg/kg	1.45E+00	8.51E+00	1.48E+02	7.10E-02	J				2.30E-01	J				ND					1.80E+00	J	YES			2.80E-01	J			
Chrysene	mg/kg	1.40E+00	8.61E+01	4.73E+00	5.40E-02	J				1.60E-01	J				ND					1.30E+00	J				2.20E-01	J			
Di-n-butyl phthalate	mg/kg	NA	7.80E+02	2.00E+02	7.10E-02	J				ND					ND					ND					ND				
Dibenz(a,h)anthracene	mg/kg	7.20E-01	8.61E-02	1.84E+01	ND					5.00E-02	J				ND					4.70E-01	J		YES		ND				
Fluoranthene	mg/kg	2.03E+00	3.09E+02	1.00E-01	5.20E-02	J				1.50E-01	J			YES	ND					1.30E+00	J			YES	ND				
Indeno(1,2,3-cd)pyrene	mg/kg	9.37E-01	8.51E-01	1.09E+02	5.20E-02	J				1.10E-01	J				ND					6.80E-01	J				ND				
Pentachlorophenol	mg/kg	NA	5.25E+00	2.00E-03	ND					ND					ND					ND					ND				
Phenanthrene	mg/kg	1.08E+00	2.32E+03	1.00E-01	ND					3.20E-02	J				ND					ND					ND				
Pyrene	mg/kg	1.63E+00	2.33E+02	1.00E-01	6.10E-02	J				1.10E-01	J			YES	ND					1.00E+00	J			YES	ND				
bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	9.30E-01	ND					5.60E-02	J				ND					ND					ND				

Table 5-1

Surface Soil and Depositional Soil Analytical Results
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Parcel					FTA-145-GP05					FTA-145-GP06					FTA-145-GP07					FTA-145-GP08					FTA-145-GP09				
Sample Location					FTA-145					FTA-145					FTA-145					FTA-145					FTA-145				
Sample Number					CY0008					CY0010					CY0014					CY0016					CY0018				
Sample Date					2-Oct-98					1-Oct-98					1-Oct-98					2-Oct-98					2-Oct-98				
Sample Depth (Feet)					0- 1					0- 1					0- 1					0- 1					0- 1				
Parameter	Units	BKG[a]	SSSL[b]	ESV[b]	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS																													
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E+01	1.49E+04			YES	YES	5.57E+03				YES	9.21E+03			YES	YES	9.34E+03			YES	YES	1.01E+04			YES	YES
Antimony	mg/kg	1.99E+00	3.11E+00	3.50E+00	ND					ND					ND					ND					ND				
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	2.70E+00			YES		4.90E+00			YES		7.20E+00			YES		5.00E+00			YES		4.90E+00			YES	
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	1.52E+02	J	YES			4.80E+01	J				1.26E+02	J	YES			1.17E+02	J				9.95E+01	J			
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	2.60E+00	J	YES		YES	6.30E-01					1.30E+00		YES		YES	1.40E+00	J	YES		YES	6.80E-01	J			
Cadmium	mg/kg	2.90E-01	6.25E+00	1.60E+00	ND					ND					ND					ND					ND				
Calcium	mg/kg	1.72E+03	NA	NA	6.44E+04		YES			3.14E+03	J	YES			1.13E+04	J	YES			1.45E+03					1.51E+04		YES		
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	2.14E+01	J			YES	2.13E+01				YES	1.49E+01				YES	1.27E+01	J			YES	1.51E+01	J			YES
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	ND					8.60E+00	J				1.30E+01	J				8.90E+00					6.60E+00				
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	1.38E+01		YES			1.17E+01					1.52E+01		YES			1.66E+01		YES			1.03E+01				
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	7.31E+03			YES	YES	1.87E+04			YES	YES	3.67E+04		YES	YES	YES	3.65E+04		YES	YES	YES	2.42E+04			YES	YES
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	1.62E+02	J	YES		YES	3.42E+01	J				2.14E+01	J				6.50E+00	J				1.09E+01	J			
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	1.18E+04	J	YES			1.64E+03	J	YES			5.91E+03	J	YES			1.09E+03	J	YES			8.39E+03	J	YES		
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	9.44E+02			YES	YES	4.98E+02			YES	YES	1.12E+03			YES	YES	1.05E+02				YES	5.45E+02			YES	YES
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	3.80E-02					4.40E-02					4.20E-02					ND					4.00E-02				
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	4.50E+00					9.80E+00					1.42E+01		YES			1.18E+01		YES			7.50E+00				
Potassium	mg/kg	8.00E+02	NA	NA	2.64E+03	J	YES			ND					2.21E+03	J	YES			3.87E+03	J	YES			1.31E+03	J	YES		
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	ND					ND					ND					9.10E-01		YES		YES	1.10E+00		YES		YES
Thallium	mg/kg	3.43E+00	5.08E-01	1.00E+00	ND					ND					ND					ND					ND				
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	2.28E+01	J			YES	1.01E+01				YES	1.09E+01				YES	ND					1.08E+01	J			YES
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	1.12E+02	J	YES		YES	1.85E+02		YES		YES	3.62E+01					2.96E+01	J				1.90E+01	J			
VOLATILE ORGANIC COMPOUNDS																													
1,2,4-Trimethylbenzene	mg/kg	NA	3.88E+02	1.00E-01	ND					ND					ND					ND					4.00E-03	J			
1,2-Dimethylbenzene	mg/kg	NA	1.55E+04	5.00E-02	ND					ND					ND					ND					ND				
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	ND					3.40E-03	B				9.20E-03	B				ND					1.40E-02	B			
Acetone	mg/kg	NA	7.76E+02	2.50E+00	ND					4.00E-02	B				1.50E-01	B				4.80E-02	B				3.00E-01	J			
Bromomethane	mg/kg	NA	1.09E+01	NA	ND					ND					ND					ND					ND				
Carbon disulfide	mg/kg	NA	7.77E+02	9.00E-02	ND					ND					2.00E-03	J				ND					ND				
Cumene	mg/kg	NA	7.77E+02	NA	ND					ND					ND					ND					ND				
Ethylbenzene	mg/kg	NA	7.77E+02	5.00E-02	ND					ND					ND					ND					ND				
Methylene chloride	mg/kg	NA	8.41E+01	2.00E+00	5.40E-03	B				2.90E-03	B				2.80E-03	B				3.50E-03	B				3.40E-03	B			
Naphthalene	mg/kg	3.30E-02	1.55E+02	1.00E-01	ND					ND					ND					ND					ND				
Toluene	mg/kg	NA	1.55E+03	5.00E-02	ND					ND					ND					ND					2.40E-03	J			
Trichlorofluoromethane	mg/kg	NA	2.33E+03	1.00E-01	ND					ND					ND					ND					ND				
m,p-Xylenes	mg/kg	NA	1.55E+04	5.00E-02	ND					ND					ND					ND					ND				
p-Cymene	mg/kg	NA	1.55E+03	NA	ND					ND					ND					ND					ND				
SEMIVOLATILE ORGANIC COMPOUNDS																													
Acenaphthylene	mg/kg	8.91E-01	4.63E+02	6.82E+02	ND					4.90E-01	J				ND					ND					ND				
Anthracene	mg/kg	9.35E-01	2.33E+03	1.00E-01	ND					8.60E-01	J			YES	ND					ND					ND				
Benzo(a)anthracene	mg/kg	1.19E+00	8.51E-01	5.21E+00	ND					2.30E-01	J				ND					ND					ND				
Benzo(a)pyrene	mg/kg	1.42E+00	8.51E-02	1.00E-01	ND					4.20E-01	J		YES	YES	ND					ND					ND				
Benzo(b)fluoranthene	mg/kg	1.66E+00	8.51E-01	5.98E+01	ND					2.90E-01	J				ND					ND					ND				
Benzo(ghi)perylene	mg/kg	9.55E-01	2.32E+02	1.19E+02	ND					1.50E+00	J	YES			4.20E-02	J				ND					ND				
Benzo(k)fluoranthene	mg/kg	1.45E+00	8.51E+00	1.48E+02	ND					4.20E-01	J				ND					ND					ND				
Chrysene	mg/kg	1.40E+00	8.61E+01	4.73E+00	ND					3.10E-01	J				ND					ND					ND				
Di-n-butyl phthalate	mg/kg	NA	7.80E+02	2.00E+02	ND					ND					ND					ND					ND				
Dibenz(a,h)anthracene	mg/kg	7.20E-01	8.61E-02	1.84E+01	ND					2.90E-01	J		YES		ND					ND					ND				
Fluoranthene	mg/kg	2.03E+00	3.09E+02	1.00E-01	ND					2.30E-01	J			YES	ND					ND					ND				
Indeno(1,2,3-cd)pyrene	mg/kg	9.37E-01	8.51E-01	1.09E+02	ND					6.90E-01	J				ND					ND					ND				
Pentachlorophenol	mg/kg	NA	5.25E+00	2.00E-03	ND					ND					ND					ND					ND				
Phenanthrene	mg/kg	1.08E+00	2.32E+03	1.00E-01	ND					ND					ND					ND					ND				
Pyrene	mg/kg	1.63E+00	2.33E+02	1.00E-01	ND					2.10E-01	J			YES	ND					ND					ND				
bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	9.30E-01	ND					ND					ND					ND					ND				

Table 5-1

Surface Soil and Depositional Soil Analytical Results
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Parcel					FTA-145-GP10					FTA-145-GP12					FTA-145-GP13					FTA-145-GP14				
Sample Location					FTA-145					FTA-145					FTA-145					FTA-145				
Sample Number					CY0020					CY0025					CY0030					CY0032				
Sample Date					1-Oct-98					2-Oct-98					10-Dec-99					10-Dec-99				
Sample Depth (Feet)					0- 1					0- 1					0- 1					0- 1				
Parameter	**Units**	**BKG[a]**	**SSSL[b]**	**ESV[b]**	**Result**	**Qual**	**>BKG**	**>SSSL**	**>ESV**	**Result**	**Qual**	**>BKG**	**>SSSL**	**>ESV**	**Result**	**Qual**	**>BKG**	**>SSSL**	**>ESV**	**Result**	**Qual**	**>BKG**	**>SSSL**	**>ESV**
METALS																								
Aluminum	mg/kg	1.63E+04	7.80E+03	5.00E+01	4.24E+03				YES	4.15E+03				YES	1.43E+04			YES	YES	7.98E+03			YES	YES
Antimony	mg/kg	1.99E+00	3.11E+00	3.50E+00	ND					ND					9.60E-01	J				5.10E-01	J			
Arsenic	mg/kg	1.37E+01	4.26E-01	1.00E+01	3.80E+00			YES		2.00E+00			YES		6.30E+00			YES		4.90E+00			YES	
Barium	mg/kg	1.24E+02	5.47E+02	1.65E+02	5.02E+01	J				3.58E+01	J				5.45E+01					8.55E+01				
Beryllium	mg/kg	8.00E-01	9.60E+00	1.10E+00	ND					ND					1.20E+00		YES		YES	9.70E-01		YES		
Cadmium	mg/kg	2.90E-01	6.25E+00	1.60E+00	8.40E+00		YES	YES	YES	ND					ND					ND				
Calcium	mg/kg	1.72E+03	NA	NA	2.18E+04	J	YES			2.70E+03		YES			1.21E+03					9.41E+02				
Chromium	mg/kg	3.70E+01	2.32E+01	4.00E-01	2.36E+01			YES	YES	9.80E+00	J			YES	1.64E+01				YES	1.60E+01				YES
Cobalt	mg/kg	1.52E+01	4.68E+02	2.00E+01	ND					ND					1.43E+01					8.20E+00				
Copper	mg/kg	1.27E+01	3.13E+02	4.00E+01	6.54E+01		YES		YES	6.10E+00					3.53E+01		YES			9.20E+00				
Iron	mg/kg	3.42E+04	2.34E+03	2.00E+02	1.18E+04			YES	YES	1.09E+04			YES	YES	3.13E+04			YES	YES	2.03E+04			YES	YES
Lead	mg/kg	4.01E+01	4.00E+02	5.00E+01	8.53E+01	J	YES		YES	1.87E+01	J				2.90E+01					2.25E+01				
Magnesium	mg/kg	1.03E+03	NA	4.40E+05	1.20E+04	J	YES			1.51E+03	J	YES			4.80E+03		YES			5.34E+02	J			
Manganese	mg/kg	1.58E+03	3.63E+02	1.00E+02	2.07E+02				YES	3.83E+02			YES	YES	2.67E+02				YES	9.02E+02			YES	YES
Mercury	mg/kg	8.00E-02	2.33E+00	1.00E-01	5.40E-02					ND					6.10E-02	B				6.20E-02	B			
Nickel	mg/kg	1.03E+01	1.54E+02	3.00E+01	7.90E+00					ND					3.57E+01		YES		YES	8.90E+00				
Potassium	mg/kg	8.00E+02	NA	NA	ND					ND					7.75E+02					5.24E+02	J			
Selenium	mg/kg	4.80E-01	3.91E+01	8.10E-01	ND					ND					ND					ND				
Thallium	mg/kg	3.43E+00	5.08E-01	1.00E+00	ND					ND					8.20E-01	B		YES		1.30E+00	B		YES	YES
Vanadium	mg/kg	5.88E+01	5.31E+01	2.00E+00	1.57E+01				YES	8.10E+00	J			YES	2.41E+01				YES	2.30E+01				YES
Zinc	mg/kg	4.06E+01	2.34E+03	5.00E+01	2.71E+02		YES		YES	9.50E+00	J				8.65E+01		YES		YES	2.91E+01				
VOLATILE ORGANIC COMPOUNDS																								
1,2,4-Trimethylbenzene	mg/kg	NA	3.88E+02	1.00E-01	ND					ND					ND					ND				
1,2-Dimethylbenzene	mg/kg	NA	1.55E+04	5.00E-02	ND					ND					ND					7.90E-03				
2-Butanone	mg/kg	NA	4.66E+03	8.96E+01	6.30E-03	B				5.70E-03	B				ND					ND				
Acetone	mg/kg	NA	7.76E+02	2.50E+00	6.30E-02	B				5.50E-02	B				ND					1.70E-02	J			
Bromomethane	mg/kg	NA	1.09E+01	NA	ND					ND					ND					ND				
Carbon disulfide	mg/kg	NA	7.77E+02	9.00E-02	ND					1.30E-02					ND					ND				
Cumene	mg/kg	NA	7.77E+02	NA	ND					ND					ND					1.80E-03	J			
Ethylbenzene	mg/kg	NA	7.77E+02	5.00E-02	ND					ND					ND					9.70E-03				
Methylene chloride	mg/kg	NA	8.41E+01	2.00E+00	4.10E-03	B				2.00E-03	B				5.40E-03	B				6.80E-03	B			
Naphthalene	mg/kg	3.30E-02	1.55E+02	1.00E-01	ND					ND					ND					ND				
Toluene	mg/kg	NA	1.55E+03	5.00E-02	ND					ND					ND					ND				
Trichlorofluoromethane	mg/kg	NA	2.33E+03	1.00E-01	ND					ND					6.00E-03	J				3.80E-03	J			
m,p-Xylenes	mg/kg	NA	1.55E+04	5.00E-02	ND					ND					ND					3.50E-02				
p-Cymene	mg/kg	NA	1.55E+03	NA	ND					ND					ND					1.90E-03	J			
SEMIVOLATILE ORGANIC COMPOUNDS																								
Acenaphthylene	mg/kg	8.91E-01	4.63E+02	6.82E+02	ND					ND					6.60E-02	J				8.70E-02	J			
Anthracene	mg/kg	9.35E-01	2.33E+03	1.00E-01	ND					ND					5.20E-02	J				6.20E-02	J			
Benzo(a)anthracene	mg/kg	1.19E+00	8.51E-01	5.21E+00	ND					ND					3.70E-02	J				5.70E-02	J			
Benzo(a)pyrene	mg/kg	1.42E+00	8.51E-02	1.00E-01	ND					ND					4.60E-02	J				6.30E-02	J			
Benzo(b)fluoranthene	mg/kg	1.66E+00	8.51E-01	5.98E+01	ND					ND					7.20E-02	J				6.90E-02	J			
Benzo(ghi)perylene	mg/kg	9.55E-01	2.32E+02	1.19E+02	ND					ND					1.20E-01	J				1.10E-01	J			
Benzo(k)fluoranthene	mg/kg	1.45E+00	8.51E+00	1.48E+02	ND					ND					4.20E-02	J				8.80E-02	J			
Chrysene	mg/kg	1.40E+00	8.61E+01	4.73E+00	ND					ND					5.30E-02	J				7.00E-02	J			
Di-n-butyl phthalate	mg/kg	NA	7.80E+02	2.00E+02	ND					ND					ND					ND				
Dibenz(a,h)anthracene	mg/kg	7.20E-01	8.61E-02	1.84E+01	ND					ND					4.00E-02	J				ND				
Fluoranthene	mg/kg	2.03E+00	3.09E+02	1.00E-01	5.70E-01	J			YES	ND					6.30E-02	J				8.00E-02	J			
Indeno(1,2,3-cd)pyrene	mg/kg	9.37E-01	8.51E-01	1.09E+02	ND					ND					9.70E-02	J				8.50E-02	J			
Pentachlorophenol	mg/kg	NA	5.25E+00	2.00E-03	ND					ND					6.80E-02	J			YES	ND				
Phenanthrene	mg/kg	1.08E+00	2.32E+03	1.00E-01	ND					ND					3.40E-02	J				ND				
Pyrene	mg/kg	1.63E+00	2.33E+02	1.00E-01	4.20E-01	J			YES	ND					5.70E-02	J				8.60E-02	J			
bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	9.30E-01	8.70E-01	J				5.10E-02	J				ND					ND				

Table 5-1

Surface Soil and Depositional Soil Analytical Results
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Analyses performed by Quanterra Environmental Services using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods, including Update III methods where applicable.

[a] Bkg - Background. For metals, the concentration listed is two times (2x) the arithmetic mean of background metals concentration given in Science Applications International Corporation (1998), *Final Background Metals Survey Report, Fort McClellan, Alabama,* July.

For SVOCs, value listed is the background screening criterion for soils adjacent to asphalt as given in IT Corporation (2000), *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama,* July.

[b] Residential human health site-specific screening levels (SSSL) and ecological screening values (ESV) as given in IT Corporation (2000), *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama,* July.

B = Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).

J = Result is greater than method detection limit but less than or equal to reporting limit.

mg/kg = Milligrams per kilogram.

NA - Not Available

ND - Not detected

Qual - Data validation qualifier

Table 5-2

Subsurface Soil Analytical Results
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Parcel				FTA-145				FTA-145				FTA-145				FTA-145				FTA-145			
Sample Location				FTA-145-GP01				FTA-145-GP02				FTA-145-GP03				FTA-145-GP04				FTA-145-GP05			
Sample Number				CY0001				CY0003				CY0005				CY0007				CY0009			
Sample Date				1-Oct-98				1-Oct-98				1-Oct-98				1-Oct-98				2-Oct-98			
Sample Depth (Feet)				4-8				1-5				5-8				1-6				5-8			
Parameter	Units	BKG[a]	SSSL[b]	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL
BTEX																							
Ethylbenzene	mg/kg	NA	7.77E+02	NR				NR				NR				NR				NR			
Toluene	mg/kg	NA	1.55E+03	NR				NR				NR				NR				NR			
Xylene, Total	mg/kg	NA	1.55E+04	NR				NR				NR				NR				NR			
LEAD																							
Lead	mg/kg	3.85E+01	4.00E+02	NR				NR				NR				NR				NR			
METALS																							
Aluminum	mg/kg	1.36E+04	7.80E+03	9.56E+03			YES	9.87E+03			YES	1.61E+04		YES	YES	6.66E+03				1.51E+04		YES	YES
Antimony	mg/kg	1.31E+00	3.11E+00	ND				ND				ND				ND				ND			
Arsenic	mg/kg	1.83E+01	4.26E-01	2.50E+00			YES	3.90E+00			YES	6.10E+00			YES	7.30E+00			YES	6.90E+00			YES
Barium	mg/kg	2.34E+02	5.47E+02	1.20E+02	J			8.20E+01	J			1.52E+02	J			8.11E+01	J			4.88E+01	J		
Beryllium	mg/kg	8.60E-01	9.60E+00	7.70E-01				1.20E+00		YES		1.30E+00		YES		1.00E+00		YES		1.20E+00	J	YES	
Cadmium	mg/kg	2.20E-01	6.25E+00	ND				ND				ND				ND				1.20E+00		YES	
Calcium	mg/kg	6.37E+02	NA	8.08E+02	J	YES		6.62E+02	J	YES		1.48E+03	J	YES		9.36E+02	J	YES		1.19E+03		YES	
Chromium	mg/kg	3.83E+01	2.32E+01	1.37E+01				1.89E+01				2.60E+01			YES	2.09E+01				2.60E+01	J		YES
Cobalt	mg/kg	1.75E+01	4.68E+02	7.10E+00	J			2.74E+01	J	YES		3.28E+01	J	YES		1.55E+01	J			1.45E+01			
Copper	mg/kg	1.94E+01	3.13E+02	9.60E+00				2.27E+01		YES		3.75E+01		YES		1.60E+01				5.36E+01		YES	
Iron	mg/kg	4.48E+04	2.34E+03	2.08E+04			YES	2.80E+04			YES	4.54E+04		YES	YES	3.09E+04			YES	3.93E+04			YES
Lead	mg/kg	3.85E+01	4.00E+02	1.18E+01	J			2.02E+01	J			2.42E+01	J			1.22E+01	J			2.07E+01	J		
Magnesium	mg/kg	7.66E+02	NA	9.03E+02	J	YES		2.08E+03	J	YES		6.74E+03	J	YES		7.08E+02	J			7.75E+03	J	YES	
Manganese	mg/kg	1.36E+03	3.63E+02	4.67E+02			YES	1.87E+03		YES	YES	1.66E+03		YES	YES	7.04E+02			YES	1.77E+02			
Mercury	mg/kg	7.00E-02	2.33E+00	ND				ND				4.50E-02				ND				4.40E-02			
Nickel	mg/kg	1.29E+01	1.54E+02	9.80E+00				3.06E+01		YES		3.73E+01		YES		2.94E+01		YES		3.24E+01		YES	
Potassium	mg/kg	7.11E+02	NA	ND				5.80E+02	J			1.06E+03	J	YES		9.85E+02	J	YES		7.91E+02	J	YES	
Selenium	mg/kg	4.70E-01	3.91E+01	6.30E-01		YES		ND				ND				ND				1.50E+00		YES	
Thallium	mg/kg	1.40E+00	5.08E-01	ND				ND				ND				ND				ND			
Vanadium	mg/kg	6.49E+01	5.31E+01	9.70E+00				ND				ND				ND				ND			
Zinc	mg/kg	3.49E+01	2.34E+03	2.45E+01				4.44E+01		YES		9.83E+01		YES		4.25E+01		YES		1.31E+02	J	YES	
VOLATILE ORGANIC COMPOUNDS																							
2-Butanone	mg/kg	NA	4.66E+03	ND				8.70E-03	B			5.00E-03	B			5.00E-03	B			ND			
Acetone	mg/kg	NA	7.76E+02	2.60E-02	B			8.50E-02	B			6.20E-02	B			9.00E-02	B			6.30E-03	B		
Carbon disulfide	mg/kg	NA	7.77E+02	ND				ND				ND				ND				ND			
Cumene	mg/kg	NA	7.77E+02	ND				ND				ND				ND				ND			
Methylene chloride	mg/kg	NA	8.41E+01	4.30E-03	B			3.80E-03	B			3.10E-03	B			3.50E-03	B			3.60E-03	B		
Trichlorofluoromethane	mg/kg	NA	2.33E+03	ND				ND				ND				ND				ND			
SEMIVOLATILE ORGANIC COMPOUNDS																							
Di-n-octyl phthalate	mg/kg	NA	1.56E+02	ND				ND				ND				ND				ND			
bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	ND				ND				ND				ND				4.80E-02	J		

Table 5-2

Subsurface Soil Analytical Results
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Parcel				FTA-145				FTA-145				FTA-145				FTA-145				FTA-145			
Sample Location				FTA-145-GP06				FTA-145-GP07				FTA-145-GP08				FTA-145-GP09				FTA-145-GP10			
Sample Number				CY0013				CY0015				CY0017				CY0019				CY0021			
Sample Date				1-Oct-98				1-Oct-98				2-Oct-98				2-Oct-98				1-Oct-98			
Sample Depth (Feet)				1-5				5-9				5-9				1-5				1-5			
Parameter	Units	BKG[a]	SSSL[b]	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL
BTEX																							
Ethylbenzene	mg/kg	NA	7.77E+02	NR				NR				NR				NR				NR			
Toluene	mg/kg	NA	1.55E+03	NR				NR				NR				NR				NR			
Xylene, Total	mg/kg	NA	1.55E+04	NR				NR				NR				NR				NR			
LEAD																							
Lead	mg/kg	3.85E+01	4.00E+02	NR				NR				NR				NR				NR			
METALS																							
Aluminum	mg/kg	1.36E+04	7.80E+03	6.92E+03				7.78E+03				1.97E+04		YES	YES	1.44E+04		YES	YES	1.86E+04		YES	YES
Antimony	mg/kg	1.31E+00	3.11E+00	ND				ND				ND				ND				ND			
Arsenic	mg/kg	1.83E+01	4.26E-01	4.10E+00			YES	2.60E+00			YES	5.80E+00			YES	6.90E+00			YES	4.20E+00			YES
Barium	mg/kg	2.34E+02	5.47E+02	7.94E+01	J			9.47E+01	J			5.81E+02	J	YES	YES	3.24E+01	J			1.09E+02	J		
Beryllium	mg/kg	8.60E-01	9.60E+00	1.10E+00		YES		7.70E-01				1.60E+00	J	YES		1.20E+00	J	YES		1.70E+00		YES	
Cadmium	mg/kg	2.20E-01	6.25E+00	ND				ND				8.40E-01		YES		ND				ND			
Calcium	mg/kg	6.37E+02	NA	6.23E+02	J			7.63E+02	J	YES		1.73E+03		YES		ND				1.86E+03	J	YES	
Chromium	mg/kg	3.83E+01	2.32E+01	1.30E+01				1.06E+01				2.88E+01	J		YES	3.15E+01	J		YES	2.97E+01			YES
Cobalt	mg/kg	1.75E+01	4.68E+02	1.97E+01	J	YES		1.10E+01	J			2.72E+01		YES		1.06E+01				2.98E+01	J	YES	
Copper	mg/kg	1.94E+01	3.13E+02	1.49E+01				9.90E+00				4.81E+01		YES		3.94E+01		YES		4.30E+01		YES	
Iron	mg/kg	4.48E+04	2.34E+03	3.31E+04			YES	1.74E+04			YES	4.99E+04		YES	YES	4.92E+04		YES	YES	3.99E+04			YES
Lead	mg/kg	3.85E+01	4.00E+02	1.40E+01	J			9.60E+00	J			1.90E+01	J			1.40E+01	J			2.04E+01	J		
Magnesium	mg/kg	7.66E+02	NA	6.76E+02	J			7.01E+02	J			8.02E+03	J	YES		1.25E+03	J	YES		6.28E+03	J	YES	
Manganese	mg/kg	1.36E+03	3.63E+02	1.35E+03			YES	3.99E+02			YES	1.65E+03		YES	YES	1.05E+02				4.41E+02			YES
Mercury	mg/kg	7.00E-02	2.33E+00	ND				ND				5.00E-02				6.20E-02				3.70E-02			
Nickel	mg/kg	1.29E+01	1.54E+02	1.46E+01		YES		1.21E+01				4.96E+01		YES		1.62E+01		YES		5.00E+01		YES	
Potassium	mg/kg	7.11E+02	NA	1.01E+03	J	YES		8.83E+02	J	YES		ND				9.37E+02	J	YES		9.65E+02	J	YES	
Selenium	mg/kg	4.70E-01	3.91E+01	ND				ND				1.90E+00		YES		2.10E+00		YES		ND			
Thallium	mg/kg	1.40E+00	5.08E-01	ND				ND				ND				ND				ND			
Vanadium	mg/kg	6.49E+01	5.31E+01	ND				ND				ND				ND				ND			
Zinc	mg/kg	3.49E+01	2.34E+03	3.00E+01				1.77E+01				1.23E+02	J	YES		4.49E+01	J	YES		1.41E+02		YES	
VOLATILE ORGANIC COMPOUNDS																							
2-Butanone	mg/kg	NA	4.66E+03	ND				1.40E-02	B			ND				ND				ND			
Acetone	mg/kg	NA	7.76E+02	3.60E-02	B			1.40E-01	B			3.60E-02	B			2.10E-02	B			1.30E-02	B		
Carbon disulfide	mg/kg	NA	7.77E+02	ND				1.50E-02				ND				ND				ND			
Cumene	mg/kg	NA	7.77E+02	ND				ND				ND				ND				ND			
Methylene chloride	mg/kg	NA	8.41E+01	4.00E-03	B			3.80E-03	B			4.40E-03	B			3.70E-03	B			3.40E-03	B		
Trichlorofluoromethane	mg/kg	NA	2.33E+03	ND				ND				ND				ND				ND			
SEMIVOLATILE ORGANIC COMPOUNDS																							
Di-n-octyl phthalate	mg/kg	NA	1.56E+02	ND				ND				ND				ND				5.10E-02	J		
bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	ND				ND				4.30E-02				5.10E-02	J			6.10E-02	J		

Table 5-2

Subsurface Soil Analytical Results
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Parcel				FTA-145				FTA-145				FTA-145				FTA-145				UST-48			
Sample Location				FTA-145-GP11				FTA-145-GP12				FTA-145-GP13				FTA-145-GP14				UST-48-GP01			
Sample Number				CY0024				CY0026				CY0031				CY0033				CJ0052			
Sample Date				1-Oct-98				2-Oct-98				10-Dec-99				10-Dec-99				3-Nov-99			
Sample Depth (Feet)				4-8				5-7				1-2				1-2				10-12			
Parameter	Units	BKG[a]	SSSL[b]	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL	Result	Qual	>BKG	>SSSL
BTEX																							
Ethylbenzene	mg/kg	NA	7.77E+02	NR				NR				NR				NR				1.50E-02	J B		
Toluene	mg/kg	NA	1.55E+03	NR				NR				NR				NR				6.00E-03	J		
Xylene, Total	mg/kg	NA	1.55E+04	NR				NR				NR				NR				2.60E-02	J B		
LEAD																							
Lead	mg/kg	3.85E+01	4.00E+02	NR				NR				NR				NR				1.45E+01	NV		
METALS																							
Aluminum	mg/kg	1.36E+04	7.80E+03	8.01E+03			YES	1.56E+04		YES	YES	1.74E+04		YES	YES	1.08E+04			YES	NR			
Antimony	mg/kg	1.31E+00	3.11E+00	ND				ND				9.90E-01	J			6.10E-01	J			NR			
Arsenic	mg/kg	1.83E+01	4.26E-01	ND				7.10E+00			YES	7.20E+00			YES	7.40E+00			YES	NR			
Barium	mg/kg	2.34E+02	5.47E+02	9.72E+01	J			7.25E+01	J			6.04E+01				6.07E+01				NR			
Beryllium	mg/kg	8.60E-01	9.60E+00	7.40E-01				1.40E+00	J	YES		1.30E+00		YES		1.10E+00		YES		NR			
Cadmium	mg/kg	2.20E-01	6.25E+00	ND				ND				ND				ND				NR			
Calcium	mg/kg	6.37E+02	NA	7.46E+02	J	YES		ND				6.37E+02				6.88E+02		YES		NR			
Chromium	mg/kg	3.83E+01	2.32E+01	1.05E+01				2.17E+01	J			1.90E+01				2.49E+01			YES	NR			
Cobalt	mg/kg	1.75E+01	4.68E+02	ND				3.82E+01		YES		1.78E+01		YES		9.20E+00				NR			
Copper	mg/kg	1.94E+01	3.13E+02	4.10E+00				5.92E+01		YES		4.33E+01		YES		1.78E+01				NR			
Iron	mg/kg	4.48E+04	2.34E+03	9.03E+03			YES	3.75E+04			YES	3.66E+04			YES	4.04E+04			YES	NR			
Lead	mg/kg	3.85E+01	4.00E+02	9.00E+00	J			3.27E+01	J			2.18E+01				1.33E+01				NR			
Magnesium	mg/kg	7.66E+02	NA	9.69E+02	J	YES		4.02E+03	J	YES		6.67E+03		YES		1.08E+03		YES		NR			
Manganese	mg/kg	1.36E+03	3.63E+02	2.74E+01				6.17E+02			YES	3.01E+02				3.50E+02				NR			
Mercury	mg/kg	7.00E-02	2.33E+00	ND				7.60E-02		YES		8.20E-02	B	YES		4.70E-02	B			NR			
Nickel	mg/kg	1.29E+01	1.54E+02	7.80E+00				9.01E+01		YES		4.64E+01		YES		1.54E+01		YES		NR			
Potassium	mg/kg	7.11E+02	NA	ND				9.78E+02	J	YES		8.99E+02		YES		1.05E+03		YES		NR			
Selenium	mg/kg	4.70E-01	3.91E+01	ND				1.50E+00		YES		ND				ND				NR			
Thallium	mg/kg	1.40E+00	5.08E-01	ND				ND				8.30E-01	B		YES	8.60E-01	B		YES	NR			
Vanadium	mg/kg	6.49E+01	5.31E+01	9.00E+00				ND				2.49E+01				2.80E+01				NR			
Zinc	mg/kg	3.49E+01	2.34E+03	1.68E+01				9.79E+01	J	YES		1.02E+02		YES		3.96E+01		YES		NR			
VOLATILE ORGANIC COMPOUNDS																							
2-Butanone	mg/kg	NA	4.66E+03	ND				ND				ND				ND				NR			
Acetone	mg/kg	NA	7.76E+02	1.60E-02	B			1.30E-02	B			ND				1.20E-02	J			NR			
Carbon disulfide	mg/kg	NA	7.77E+02	2.30E-03	J			ND				ND				ND				NR			
Cumene	mg/kg	NA	7.77E+02	ND				ND				ND				1.30E-03	J			NR			
Methylene chloride	mg/kg	NA	8.41E+01	3.10E-03	B			4.60E-03	B			4.70E-03	B			5.40E-03	B			NR			
Trichlorofluoromethane	mg/kg	NA	2.33E+03	ND				ND				3.20E-03	J			4.00E-03	J			NR			
SEMIVOLATILE ORGANIC COMPOUNDS																							
Di-n-octyl phthalate	mg/kg	NA	1.56E+02	ND				ND				ND				ND				NR			
bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	ND				ND				ND				ND				NR			

Table 5-2

Subsurface Soil Analytical Results
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Parcel				UST-48				UST-48			
Sample Location				UST-48-GP02				UST-48-MW01			
Sample Number				CJ0054				CJ0051			
Sample Date				3-Nov-99				3-Nov-99			
Sample Depth (Feet)				10-12				8-11			
Parameter	**Units**	**BKG[a]**	**SSSL[b]**	**Result**	**Qual**	**>BKG**	**>SSSL**	**Result**	**Qual**	**>BKG**	**>SSSL**
BTEX											
Ethylbenzene	mg/kg	NA	7.77E+02	2.20E-02	J B			1.60E-02	J B		
Toluene	mg/kg	NA	1.55E+03	1.10E-02	J			6.60E-03	J		
Xylene, Total	mg/kg	NA	1.55E+04	5.60E-02	J B			2.60E-02	J B		
LEAD											
Lead	mg/kg	3.85E+01	4.00E+02	2.07E+01	NV			2.42E+01	NV		
METALS											
Aluminum	mg/kg	1.36E+04	7.80E+03	NR				NR			
Antimony	mg/kg	1.31E+00	3.11E+00	NR				NR			
Arsenic	mg/kg	1.83E+01	4.26E-01	NR				NR			
Barium	mg/kg	2.34E+02	5.47E+02	NR				NR			
Beryllium	mg/kg	8.60E-01	9.60E+00	NR				NR			
Cadmium	mg/kg	2.20E-01	6.25E+00	NR				NR			
Calcium	mg/kg	6.37E+02	NA	NR				NR			
Chromium	mg/kg	3.83E+01	2.32E+01	NR				NR			
Cobalt	mg/kg	1.75E+01	4.68E+02	NR				NR			
Copper	mg/kg	1.94E+01	3.13E+02	NR				NR			
Iron	mg/kg	4.48E+04	2.34E+03	NR				NR			
Lead	mg/kg	3.85E+01	4.00E+02	NR				NR			
Magnesium	mg/kg	7.66E+02	NA	NR				NR			
Manganese	mg/kg	1.36E+03	3.63E+02	NR				NR			
Mercury	mg/kg	7.00E-02	2.33E+00	NR				NR			
Nickel	mg/kg	1.29E+01	1.54E+02	NR				NR			
Potassium	mg/kg	7.11E+02	NA	NR				NR			
Selenium	mg/kg	4.70E-01	3.91E+01	NR				NR			
Thallium	mg/kg	1.40E+00	5.08E-01	NR				NR			
Vanadium	mg/kg	6.49E+01	5.31E+01	NR				NR			
Zinc	mg/kg	3.49E+01	2.34E+03	NR				NR			
VOLATILE ORGANIC COMPOUNDS											
2-Butanone	mg/kg	NA	4.66E+03	NR				NR			
Acetone	mg/kg	NA	7.76E+02	NR				NR			
Carbon disulfide	mg/kg	NA	7.77E+02	NR				NR			
Cumene	mg/kg	NA	7.77E+02	NR				NR			
Methylene chloride	mg/kg	NA	8.41E+01	NR				NR			
Trichlorofluoromethane	mg/kg	NA	2.33E+03	NR				NR			
SEMIVOLATILE ORGANIC COMPOUNDS											
Di-n-octyl phthalate	mg/kg	NA	1.56E+02	NR				NR			
bis(2-Ethylhexyl)phthalate	mg/kg	NA	4.52E+01	NR				NR			

Table 5-2

Subsurface Soil Analytical Results
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Analyses performed by Quanterra Environmental Services using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods, including Update III methods where applicable.

[a] Bkg - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in Science Applications International Corporation (1998), *Final Background Metals Survey Report, Fort McClellan, Alabama,* July.

[b] Residential human health site-specific screening levels (SSSL) as given in IT Corporation (2000), *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama,* July.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).
J - Result is greater than method detection limit but less than or equal to reporting limit.
mg/kg - Milligrams per kilogram.
NA - Not available.
ND - Not detected.
NR - Analysis not requested.
NV - Not validated.
Qual - Data validation qualifier.

Table 5-3

Groundwater Analytical Results
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Parcel Sample Location Sample Number Sample Date				FTA-145 FTA-145-GP02 CY3001 7-Jan-99				FTA-145 FTA-145-GP03 CY3002 4-Jan-99				FTA-145 FTA-145-GP03 CY3002R 28-Jun-99				FTA-145 FTA-145-GP04 CY3003 4-Jan-99				FTA-145 FTA-145-GP05 CY3004 17-Dec-98			
Parameter	**Units**	**BKG[a]**	**SSSL[b]**	**Result**	**Qual**	**>BKG**	**>SSSL**	**Result**	**Qual**	**>BKG**	**>SSSL**	**Result**	**Qual**	**>BKG**	**>SSSL**	**Result**	**Qual**	**>BKG**	**>SSSL**	**Result**	**Qual**	**>BKG**	**>SSSL**
METALS																							
Aluminum	mg/L	2.34E+00	1.56E+00	5.25E+00		YES	YES	1.18E+01		YES	YES	NR				7.92E-01				3.91E+00	J	YES	YES
Arsenic	mg/L	1.78E-02	4.00E-05	ND				5.60E-03	J		YES	NR				ND				ND			
Barium	mg/L	1.27E-01	1.10E-01	8.97E-02	J			1.87E-01	J	YES	YES	NR				9.76E-02	J			8.47E-02	J		
Beryllium	mg/L	1.24E-03	3.12E-03	ND				ND				NR				ND				ND			
Calcium	mg/L	5.65E+01	NA	3.95E+01				5.21E+01				NR				6.12E+01		YES		5.08E+01			
Chromium	mg/L	NA	4.69E-03	1.36E-02	B		YES	2.27E-02	B		YES	NR				8.10E-03	B		YES	6.70E-03	J		YES
Cobalt	mg/L	2.34E-02	9.39E-02	5.60E-03	J			7.50E-03	J			NR				ND				ND			
Copper	mg/L	2.55E-02	6.26E-02	7.60E-03	J			2.12E-02	J			NR				4.20E-03	J			ND			
Iron	mg/L	7.04E+00	4.69E-01	7.06E+00		YES	YES	1.96E+01		YES	YES	NR				4.37E+00			YES	4.93E+00	J		YES
Lead	mg/L	7.99E-03	1.50E-02	1.50E-03	J			1.21E-02		YES		NR				ND				2.40E-03	J		
Magnesium	mg/L	2.13E+01	NA	1.64E+01				1.90E+01				NR				1.92E+01				1.81E+01			
Manganese	mg/L	5.81E-01	7.35E-02	3.87E+00		YES	YES	4.85E-01			YES	NR				1.28E+00		YES	YES	3.33E-01			YES
Mercury	mg/L	NA	4.60E-04	6.30E-05	J			4.50E-05	J			NR				ND				5.70E-05	B		
Nickel	mg/L	NA	3.13E-02	1.15E-02	J			2.95E-02	J			NR				ND				1.10E-02	J		
Potassium	mg/L	7.20E+00	NA	3.90E+00	B			4.32E+00	B			NR				5.71E+00	B			3.62E+00	J		
Selenium	mg/L	NA	7.82E-03	ND				ND				NR				ND				ND			
Sodium	mg/L	1.48E+01	NA	8.17E+00				6.31E+00				NR				9.54E+00				1.21E+01			
Thallium	mg/L	1.45E-03	1.00E-04	ND				7.40E-03	B	YES	YES	NR				4.70E-03	B	YES	YES	4.50E-03	B	YES	YES
Vanadium	mg/L	1.70E-02	1.10E-02	1.78E-02	B	YES	YES	2.93E-02	B	YES	YES	NR				1.75E-02	B	YES	YES	1.61E-02	J		YES
Zinc	mg/L	2.20E-01	4.69E-01	1.74E-02	J			4.04E-02				NR				ND				9.90E-03	J		
VOLATILE ORGANIC COMPOUNDS																							
Acetone	mg/L	NA	1.56E-01	1.40E-03	J			NR				5.10E-03	B			ND				ND			
Carbon disulfide	mg/L	NA	1.51E-01	ND				NR				ND				ND				2.50E-04	J		
Chloroform	mg/L	NA	1.15E-03	ND				NR				ND				ND				ND			
Chloromethane	mg/L	NA	3.92E-03	2.50E-04	J			NR				ND				ND				ND			
Methylene chloride	mg/L	NA	7.85E-03	ND				NR				ND				ND				ND			
SEMIVOLATILE ORGANIC COMPOUNDS																							
Di-n-butyl phthalate	mg/L	NA	1.48E-01	ND				2.50E-03	J			NR				1.60E-03	J			ND			
Phenol	mg/L	NA	9.31E-01	9.70E-04	B			1.10E-03	B			NR				1.20E-03	B			ND			
bis(2-Ethylhexyl)phthalate	mg/L	NA	4.30E-03	6.40E-03	J		YES	ND				NR				ND				ND			

Table 5-3

Groundwater Analytical Results
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Parcel				FTA-145				FTA-145				FTA-145				FTA-145				FTA-145			
Sample Location				FTA-145-GP06				FTA-145-GP07				FTA-145-GP08				FTA-145-GP09				FTA-145-GP10			
Sample Number				CY3005				CY3008				CY3009				CY3010				CY3011			
Sample Date				12-Jan-99				17-Dec-98				7-Jan-99				4-Jan-99				18-Dec-98			
Parameter	**Units**	**BKG[a]**	**SSSL[b]**	**Result**	**Qual**	**>BKG**	**>SSSL**	**Result**	**Qual**	**>BKG**	**>SSSL**	**Result**	**Qual**	**>BKG**	**>SSSL**	**Result**	**Qual**	**>BKG**	**>SSSL**	**Result**	**Qual**	**>BKG**	**>SSSL**
METALS																							
Aluminum	mg/L	2.34E+00	1.56E+00	5.33E+01	J	YES	YES	2.76E-01	J			7.36E+00		YES	YES	2.81E+00		YES	YES	6.90E-01	J		
Arsenic	mg/L	1.78E-02	4.00E-05	1.06E-02	J		YES	ND				ND				ND				ND			
Barium	mg/L	1.27E-01	1.10E-01	4.15E-01	J	YES	YES	6.48E-02	J			2.63E-01		YES	YES	1.46E-01	J	YES	YES	4.14E-02	J		
Beryllium	mg/L	1.24E-03	3.12E-03	2.80E-03	J	YES		ND				ND				ND				ND			
Calcium	mg/L	5.65E+01	NA	1.12E+02	J	YES		7.64E+01		YES		5.64E+01				6.43E+01		YES		3.90E+01			
Chromium	mg/L	NA	4.69E-03	1.27E-01	J		YES	5.70E-03	J		YES	1.82E-02	B		YES	7.80E-03	B		YES	ND			
Cobalt	mg/L	2.34E-02	9.39E-02	1.63E-02	J			ND				ND				ND				ND			
Copper	mg/L	2.55E-02	6.26E-02	7.93E-02	J	YES	YES	1.73E-02	J			6.80E-03	J			3.80E-03	J			ND			
Iron	mg/L	7.04E+00	4.69E-01	7.20E+01	J	YES	YES	2.26E+00	J		YES	7.55E+00		YES	YES	5.16E+00			YES	7.56E-01	J		YES
Lead	mg/L	7.99E-03	1.50E-02	3.33E-02	J	YES	YES	ND				1.50E-03	J			ND				ND			
Magnesium	mg/L	2.13E+01	NA	6.23E+01	J	YES		2.40E+01		YES		1.61E+01				1.74E+01				2.28E+01		YES	
Manganese	mg/L	5.81E-01	7.35E-02	1.34E+00	J	YES	YES	3.22E-01			YES	4.95E-01			YES	5.04E-01			YES	1.59E-01			YES
Mercury	mg/L	NA	4.60E-04	2.50E-04	J			6.10E-05	B			ND				4.60E-05	J			5.80E-05	B		
Nickel	mg/L	NA	3.13E-02	1.08E-01	J		YES	ND				1.64E-02	J			ND				ND			
Potassium	mg/L	7.20E+00	NA	1.51E+01	J	YES		1.72E+00	J			3.65E+00	B			3.31E+00	B			1.36E+00	J		
Selenium	mg/L	NA	7.82E-03	ND				ND				ND				ND				ND			
Sodium	mg/L	1.48E+01	NA	1.28E+01				8.42E+00				7.24E+00				6.50E+00				5.30E+00			
Thallium	mg/L	1.45E-03	1.00E-04	5.00E-03	J	YES	YES	4.60E-03	B	YES	YES	4.40E-03	B	YES	YES	5.00E-03	B	YES	YES	6.30E-03	B	YES	YES
Vanadium	mg/L	1.70E-02	1.10E-02	9.26E-02	J	YES	YES	1.68E-02	J		YES	2.44E-02	B	YES	YES	1.91E-02	B	YES	YES	1.13E-02	J		YES
Zinc	mg/L	2.20E-01	4.69E-01	2.03E-01	J			1.25E-02	J			1.74E-02	J			ND				ND			
VOLATILE ORGANIC COMPOUNDS																							
Acetone	mg/L	NA	1.56E-01	ND				2.40E-03	J			ND				ND				2.20E-03	J		
Carbon disulfide	mg/L	NA	1.51E-01	ND				ND				ND				ND				ND			
Chloroform	mg/L	NA	1.15E-03	ND				ND				ND				ND				ND			
Chloromethane	mg/L	NA	3.92E-03	ND				3.20E-04	B			ND				ND				1.90E-04	B		
Methylene chloride	mg/L	NA	7.85E-03	7.20E-04	B			ND				ND				ND				ND			
SEMIVOLATILE ORGANIC COMPOUNDS																							
Di-n-butyl phthalate	mg/L	NA	1.48E-01	ND				ND				ND				3.00E-03	J			1.80E-03	J		
Phenol	mg/L	NA	9.31E-01	ND				ND				ND				ND				ND			
bis(2-Ethylhexyl)phthalate	mg/L	NA	4.30E-03	ND				ND				ND				ND				ND			

Table 5-3

Groundwater Analytical Results
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Parcel Sample Location Sample Number Sample Date				FTA-145 FTA-145-GP12 CY3012 18-Dec-98				FTA-145 FTA-145-GP13 CY3013 6-Jan-00			
Parameter	**Units**	**BKG[a]**	**SSSL[b]**	**Result**	**Qual**	**>BKG**	**>SSSL**	**Result**	**Qual**	**>BKG**	**>SSSL**
METALS											
Aluminum	mg/L	2.34E+00	1.56E+00	6.81E+01	J	YES	YES	5.94E-01			
Arsenic	mg/L	1.78E-02	4.00E-05	1.12E-02			YES	ND			
Barium	mg/L	1.27E-01	1.10E-01	5.13E-01		YES	YES	8.67E-02	J		
Beryllium	mg/L	1.24E-03	3.12E-03	2.90E-03	B	YES		ND			
Calcium	mg/L	5.65E+01	NA	1.86E+01				6.07E+01		YES	
Chromium	mg/L	NA	4.69E-03	8.71E-02			YES	ND			
Cobalt	mg/L	2.34E-02	9.39E-02	5.18E-02		YES		ND			
Copper	mg/L	2.55E-02	6.26E-02	9.99E-02		YES	YES	ND			
Iron	mg/L	7.04E+00	4.69E-01	9.25E+01	J	YES	YES	8.73E-01			YES
Lead	mg/L	7.99E-03	1.50E-02	4.71E-02		YES	YES	ND			
Magnesium	mg/L	2.13E+01	NA	3.42E+01		YES		1.95E+01			
Manganese	mg/L	5.81E-01	7.35E-02	1.62E+00		YES	YES	2.68E-01			YES
Mercury	mg/L	NA	4.60E-04	1.40E-04	B			ND			
Nickel	mg/L	NA	3.13E-02	1.29E-01			YES	ND			
Potassium	mg/L	7.20E+00	NA	1.32E+01		YES		1.04E+00	J		
Selenium	mg/L	NA	7.82E-03	5.40E-03				ND			
Sodium	mg/L	1.48E+01	NA	7.33E+00				8.87E+00			
Thallium	mg/L	1.45E-03	1.00E-04	6.50E-03	B	YES	YES	ND			
Vanadium	mg/L	1.70E-02	1.10E-02	4.11E-02	J	YES	YES	ND			
Zinc	mg/L	2.20E-01	4.69E-01	3.12E-01		YES		2.70E-03	J		
VOLATILE ORGANIC COMPOUNDS											
Acetone	mg/L	NA	1.56E-01	3.50E-03	J			ND			
Carbon disulfide	mg/L	NA	1.51E-01	3.40E-04	J			ND			
Chloroform	mg/L	NA	1.15E-03	1.60E-04	B			ND			
Chloromethane	mg/L	NA	3.92E-03	ND				ND			
Methylene chloride	mg/L	NA	7.85E-03	ND				ND			
SEMIVOLATILE ORGANIC COMPOUNDS											
Di-n-butyl phthalate	mg/L	NA	1.48E-01	ND				ND			
Phenol	mg/L	NA	9.31E-01	ND				ND			
bis(2-Ethylhexyl)phthalate	mg/L	NA	4.30E-03	ND				ND			

Table 5-3

Groundwater Analytical Results
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Analyses performed by Quanterra Environmental Services using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods, including Update III methods where applicable.

[a] Bkg - Background. Concentration listed is two times (2x) the arithmetic mean of background metals concentration given in Science Applications International Corporation (1998), *Final Background Metals Survey Report, Fort McClellan, Alabama,* July.

[b] Residential human health site-specific screening level (SSSL) as given in IT Corporation (2000), *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama,* July.

B - Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).

J - Result is greater than method detection limit but less than or equal to reporting limit.

mg/L - Milligrams per liter.

NA - Not available

ND - Not detected

NR - Analysis not requested

Table 5-4

Surface Water Analytical Results
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Parcel					FTA-100					FTA-100					FTA-145					FTA-145					Watershed				
Sample Location					FTA-100-SW/SD01					FTA-100-SW/SD02					FTA-145-SW/SD01					FTA-145-SW/SD02					WS145-SW/SD01				
Sample Number					CV2001					CV2002					CY2001					CY2002					WS2002				
Sample Date					26-Jan-99					26-Jan-99					27-Jan-99					27-Jan-99					27-Jan-99				
Parameter	Units	BKG[a]	SSSL[b]	ESV[b]	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS																												
Aluminum	mg/L	5.26E+00	1.53E+01	8.70E-02	7.31E-02	B				6.09E-02	B				6.63E-02	B				7.61E-02	B				8.42E-02	B			
Antimony	mg/L	NA	5.84E-03	1.60E-01	ND					1.40E-03	J				ND					ND					ND				
Barium	mg/L	7.53E-02	1.10E+00	3.90E-03	3.64E-02	J			YES	3.71E-02	J			YES	3.60E-02	J			YES	3.00E-02	J			YES	3.84E-02	J			YES
Beryllium	mg/L	3.00E-04	1.75E-02	5.30E-04	1.20E-04	B				1.50E-04	B				ND					ND					ND				
Calcium	mg/L	2.52E+01	NA	1.16E+02	1.85E+01					1.88E+01					2.06E+01					1.61E+01					2.23E+01				
Chromium	mg/L	1.11E-02	4.08E-02	1.10E-02	ND					1.60E-03	J				ND					ND					ND				
Iron	mg/L	1.96E+01	4.70E+00	1.00E+00	6.03E-02	B				5.13E-02	B				ND					6.74E-02	J				ND				
Magnesium	mg/L	1.10E+01	NA	8.20E+01	3.34E+00	J				3.42E+00	J				3.37E+00	J				2.61E+00	J				3.61E+00	J			
Manganese	mg/L	5.65E-01	6.40E-01	8.00E-02	3.30E-03	J				3.30E-03	J				3.00E-03	J				3.70E-03	J				3.70E-03	J			
Mercury	mg/L	NA	4.25E-03	1.00E-05	ND					ND					ND					ND					5.50E-05	J			YES
Potassium	mg/L	2.56E+00	NA	5.30E+01	1.23E+00	B				1.35E+00	B				1.15E+00	J				8.46E-01	J				1.27E+00	J			
Selenium	mg/L	NA	7.82E-02	5.00E-03	ND					2.70E-03	J				ND					ND					ND				
Sodium	mg/L	3.44E+00	NA	6.80E+02	9.82E-01	J				1.02E+00	J				1.28E+00	B				9.04E-01	B				1.23E+00	B			
Vanadium	mg/L	1.52E-02	7.90E-02	1.90E-02	ND					2.80E-03	B				ND					ND					ND				
VOLATILE ORGANIC COMPOUNDS																												
Acetone	mg/L	NA	1.57E+00	7.80E+01	ND					ND					ND					ND					5.60E-03	J			
Methylene chloride	mg/L	NA	1.42E-01	1.93E+00	ND					ND					ND					ND					1.20E-03	B			
Toluene	mg/L	NA	2.32E+00	1.75E-01	ND					ND					1.40E-03					5.80E-04	J				ND				
Trichloroethene	mg/L	NA	8.80E-02	2.19E+01	5.60E-04	J				5.90E-04	J				4.20E-04	J				4.20E-04	J				1.00E-03				
SEMIVOLATILE ORGANIC COMPOUNDS																												
bis(2-Ethylhexyl)phthalate	mg/L	NA	5.17E-02	3.00E-04	ND					3.10E-03	B			YES	ND					1.10E-03	J			YES	1.40E-03	J			YES

Analyses performed by Quanterra Environmental Services using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods, including Update III methods where applicable.

[a] Bkg - Background. For metals, the concentration listed is two times (2x) the arithmetic mean of background metals concentration given in Science Applications International Corporation (1998), *Final Background Metals Survey Report, Fort McClellan, Alabama,* July.

[b] Recreational site user human health site-specific screening levels (SSSL) and ecological screening values (ESV) as given in IT Corporation (2000), *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama,* July.

B = Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).
J = Result is greater than method detection limit but less than or equal to reporting limit.
mg/L = Milligrams per liter.
NA - Not Available
ND - Not detected
Qual - Data validation qualifier

Table 5-5

Sediment Analytical Results
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Parcel				FTA-100					FTA-100					FTA-145					FTA-145					Watershed				
Sample Location				FTA-100-SW/SD01					FTA-100-SW/SD02					FTA-145-SW/SD01					FTA-145-SW/SD02					WS145-SW/SD01				
Sample Number				CV1001					CV1002					CY1001					CY1002					WS1002				
Sample Date				26-Jan-99					26-Jan-99					27-Jan-99					27-Jan-99					27-Jan-99				
Sample Depth (Feet)				0- 2					0- 1					0- 1.5					0- .5					0- 1				
Parameter	BKG[a]	SSSL[b]	ESV[b]	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV	Result	Qual	>BKG	>SSSL	>ESV
METALS																												
Aluminum	8.59E+03	1.15E+06	NA	3.24E+03					4.81E+03					3.80E+03					2.41E+03					3.36E+03				
Antimony	7.30E-01	4.22E+02	1.20E+01	1.50E-01	J				3.20E-01	J				ND					ND					ND				
Arsenic	1.13E+01	5.58E+01	7.24E+00	6.50E+00					5.70E+00					4.20E+00					4.00E+00					5.30E+00				
Barium	9.89E+01	8.36E+04	NA	3.13E+01					4.94E+01					5.67E+01					1.88E+01	J				4.24E+01				
Beryllium	9.70E-01	1.50E+02	NA	8.30E-01					9.70E-01		YES			6.80E-01	J				3.50E-01	J				7.90E-01				
Cadmium	4.30E-01	1.71E+02	1.00E+00	1.40E-01	J				2.10E-01	J				ND					ND					ND				
Calcium	1.11E+03	NA	NA	4.07E+02	J				9.42E+02					1.40E+03		YES			4.29E+02	J				2.98E+03	J	YES		
Chromium	3.12E+01	2.79E+03	5.23E+01	1.68E+01	J				1.13E+01	J				9.80E+00					1.10E+01					2.23E+01	J			
Cobalt	1.10E+01	6.72E+04	5.00E+01	5.70E+00	J				9.60E+00					4.40E+00	J				2.40E+00	J				3.60E+00	J			
Copper	1.71E+01	4.74E+04	1.87E+01	1.11E+01					1.76E+01		YES			1.09E+01					7.30E+00					1.07E+01	J			
Iron	3.53E+04	3.59E+05	NA	2.76E+04					2.82E+04					1.52E+04					1.30E+04					2.30E+04				
Lead	3.78E+01	4.00E+02	3.02E+01	9.00E+00					2.37E+01					1.70E+01					2.06E+01					1.28E+01				
Magnesium	9.06E+02	NA	NA	2.83E+02	J				8.19E+02					6.12E+02	J				4.17E+02	J				1.10E+03	J	YES		
Manganese	7.12E+02	4.38E+04	NA	2.13E+02					4.12E+02					2.93E+02					1.73E+02					2.31E+02				
Mercury	1.10E-01	2.99E+02	1.30E-01	ND					4.00E-02	J				2.80E-02	J				2.00E-02	J				1.60E-02	J			
Nickel	1.30E+01	1.76E+04	1.59E+01	6.70E+00					1.09E+01					7.60E+00					4.30E+00	J				7.90E+00				
Potassium	1.01E+03	NA	NA	9.05E+02					1.07E+03		YES			9.65E+02					2.00E+02	J				8.42E+02				
Selenium	7.20E-01	5.96E+03	NA	6.10E-01	J				9.30E-01		YES			1.00E+00	B	YES			9.00E-01	B	YES			7.20E-01	B	YES		
Sodium	6.92E+02	NA	NA	2.78E+01	B				3.15E+01	B				9.81E+01	B				7.66E+01	B				8.80E+01	B			
Thallium	1.30E-01	7.78E+01	NA	ND					5.60E-01	B	YES			ND					ND					ND				
Vanadium	4.09E+01	4.83E+03	NA	1.47E+01					1.52E+01					1.17E+01					1.37E+01					1.76E+01				
Zinc	5.27E+01	3.44E+05	1.24E+02	7.02E+01	J	YES			6.81E+01	J	YES			7.87E+01		YES			4.66E+01					6.67E+01	J	YES		
VOLATILE ORGANIC COMPOUNDS																												
Acetone	NA	1.03E+05	4.53E-01	ND					ND					2.10E-02	J				ND					ND				
Benzene	NA	2.54E+03	5.70E-02	ND					ND					2.10E-03	J				ND					ND				
Bromomethane	NA	1.43E+03	NA	ND					ND					2.20E-03	B				ND					ND				
Methylene chloride	NA	9.84E+03	1.26E+00	2.50E-03	B				2.80E-03	B				3.80E-03	B				3.50E-03	B				3.50E-03	B			
p-Cymene	NA	2.08E+05	NA	ND					4.30E-03	J				ND					ND					ND				
SEMIVOLATILE ORGANIC COMPOUNDS																												
Benzo(a)anthracene	NA	8.93E+01	3.30E-01	ND					ND					ND					6.60E-02	J				ND				
Benzo(a)pyrene	NA	8.93E+00	3.30E-01	ND					ND					4.00E-02	J				7.80E-02	J				3.00E-02	J			
Benzo(b)fluoranthene	NA	8.93E+01	6.55E-01	ND					6.80E-02	J				ND					8.90E-02	J				ND				
Benzo(ghi)perylene	NA	2.79E+04	6.55E-01	ND					ND					ND					6.20E-02	J				ND				
Benzo(k)fluoranthene	NA	8.93E+02	6.55E-01	ND					ND					ND					6.70E-02	J				ND				
Chrysene	NA	9.79E+03	3.30E-01	ND					4.50E-02	J				ND					7.50E-02	J				ND				
Di-n-butyl phthalate	NA	1.14E+05	1.11E-01	ND					ND					ND					ND					5.20E-02	J			
Fluoranthene	NA	3.73E+04	3.30E-01	ND					4.90E-02	J				7.10E-02	J				1.10E-01	J				ND				
Indeno(1,2,3-cd)pyrene	NA	8.93E+01	6.55E-01	ND					ND					ND					5.80E-02	J				ND				
Pyrene	NA	3.06E+04	3.30E-01	ND					ND					6.10E-02	J				9.50E-02	J				ND				
bis(2-Ethylhexyl)phthalate	NA	5.41E+03	1.82E-01	5.40E-02	B				6.30E-02	B				1.60E-01	J				ND					1.20E-01	J			

Table 5-5

Sediment Analytical Results
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County, Alabama

Analyses performed by Quanterra Environmental Services using U.S. Environmental Protection Agency (EPA) SW-846 analytical methods, including Update III methods where applicable.

[a] Bkg - Background. For metals, the concentration listed is two times (2x) the arithmetic mean of background metals concentration given in Science Applications International Corporation (1998), *Final Background Metals Survey Report, Fort McClellan, Alabama,* July.

[b] Recreational site user human health site-specific screening levels (SSSL) and ecological screening values (ESV) as given in IT Corporation (2000), *Final Human Health and Ecological Screening Values and PAH Background Summary Report, Fort McClellan, Calhoun County, Alabama,* July.

B = Analyte detected in laboratory or field blank at concentration greater than the reporting limit (and greater than zero).

J = Result is greater than method detection limit but less than or equal to reporting limit.

mg/kg = Milligrams per kilogram.

NA - Not Available

ND - Not detected

Qual - Data validation qualifier

Bromomethane (FTA-145-DEP01), 1,2-dimethylbenzene (FTA-145-GP14), cumene (FTA-145-GP14), naphthalene (FTA-145-GP02), and p-cymene (FTA-145-GP14) were each detected in only one of the samples. Sample locations FTA-145-GP02 and FTA-145-GP14 each contained eight of the fourteen detected VOCs. However, none of the detected VOCs were present at a concentration exceeding residential human health SSSLs or ESVs.

Semivolatile Organic Compounds. Sixteen SVOCs, including thirteen PAH compounds and three non-PAHG compounds, were detected in surface and depositional soil samples collected at the Former Motor Pool Area 1800/1900. SVOCs were not detected in the surface soils collected from sample locations FTA-145-GP02, FTA-145-GP05, FTA-145-GP08, and FTA-145-GP09. Sample locations FTA-145-DEP02 and FTA-145-GP13 each contained fourteen of the sixteen detected SVOCs. The SVOC analytical results were flagged with a "J" data qualifier, signifying that the results were greater than the MDL but less than the RL.

The concentrations of the PAHs benzo(a)anthracene (FTA-145-GP03), benzo(a)pyrene (FTA-145-DEP02, FTA-145-GP03, FTA-145-GP04, and FTA-145-GP06), benzo(b)fluoranthene (FTA-145-GP03), and dibenz(a,h)anthracene (FTA-145-GP03 and FTA-145-GP06) exceeded residential human health SSSLs. The anthracene (FTA-145-GP03 and FTA-145-GP06), benzo(a)pyrene (FTA-145-DEP02, FTA-145-GP03, FTA-145-GP04, and FTA-145-GP06), fluoranthene (FTA-145-DEP02, FTA-145-GP03, FTA-145-GP06, and FTA-145-GP10), pyrene (FTA-145-DEP02, FTA-145-GP03, FTA-145-GP06, and FTA-145-GP10), and pentachlorophenol (FTA-145-GP13) concentrations exceeded ESVs. The concentrations of benzo(a)anthracene and benzo(a)pyrene in the samples from location FTA-145-GP03 also exceeded PAH background screening values for soils adjacent to asphalt. Because FTA-145-GP03 was collected from beneath asphalt, these results were compared to PAH background screening values for soils beneath asphalt; the PAH concentrations were below the screening values.

5.2 Subsurface Soil Analytical Results

Seventeen subsurface soil samples were collected for chemical analyses at the Former Motor Pool Area 1800/1900. Subsurface soil samples were collected at depths greater than 1 foot bgs at the locations shown on Figure 3-1. Analytical results were compared to residential human health SSSLs and background screening values, as presented in Table 5-2.

Metals. Twenty-one metals were detected in subsurface soil samples collected at the Former Motor Pool Area 1800/1900. The concentrations of seven metals (aluminum, arsenic, barium, chromium, iron, manganese, and thallium) exceeded residential human health SSSLs. Of these metals the concentrations of aluminum (seven locations), barium (one location), iron (three locations) and manganese (three locations) also exceeded their respective background concentration. However, these metal concentrations were within the range of background values determined by SAIC (1998).

Volatile Organic Compounds. Acetone, 2-butanone, carbon disulfide, cumene, methylene chloride, and trichlorofluoromethane were detected in subsurface soil samples collected at the Former Motor Pool Area 1800/1900. The 2-butanone (with the exception of FTA-145-GP14), acetone (with the exception of FTA-145-GP14), and methylene chloride analytical results were flagged with a "B" data qualifier, signifying that these compounds were also detected in an associated laboratory or field blank sample. None of the detected VOCs were present at a concentration exceeding residential human health SSSLs.

BTEX. BTEX compounds were detected in the subsurface soil samples collected at Parcel 48(7) (UST-48-GP01, UST-48-GP02, and UST-48-MW01). The BTEX concentrations were below residential human health SSSLs.

Semivolatile Organic Compounds. Di-n-octyl phthalate (one location) and bis(2-ethylhexyl)phthalate (four locations) were detected in subsurface soil samples collected at the Former Motor Pool Area 1800/1900. The di-n-octyl phthalate and bis(2-ethylhexyl)phthalate concentrations were below residential human health SSSLs.

5.3 Groundwater Analytical Results

Eleven monitoring wells were sampled at the Former Motor Pool Area 1800/1900 at the locations shown on Figure 3-1. Analytical results were compared to residential human health SSSLs and background screening values, as presented in Table 5-3.

Metals. Twenty metals, including aluminum, arsenic, barium, beryllium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, sodium, thallium, vanadium, and zinc, were detected in groundwater samples collected at the Former Motor Pool Area 1800/1900. Sample location FTA-145-GP12 contained each of the

detected metals, and sample location FTA-145-GP06 contained nineteen of the twenty detected metals.

The concentrations of 11 metals exceeded residential human health SSSLs in the groundwater samples. However, with the exceptions of aluminum (FTA-145-GP12), barium (FTA-145-GP06 and FTA-145-GP12), copper (FTA-145-GP06 and FTA-145-GP12), iron (FTA-145-GP12), and thallium (FTA-145-GP12), the concentrations of these metals were within the background concentrations or the range of background values (Appendix H). The metals concentrations exceeding residential human health SSSLs, background concentrations, and the range of background values were present in samples collected at FTA-145-GP06 and FTA-145-GP12. As shown in Table 3-6 and in the purge records in Appendix A, the samples from FTA-145-GP06 and FTA-145-GP12 had high turbidity (greater than 1,000 NTUs and 612 NTUs, respectively) at the time of sample collection. Based on the results of a groundwater resampling effort conducted by IT to evaluate the effects of turbidity on metals concentrations in groundwater, high turbidity at the time of sample collection results in elevated metals concentrations (IT, 2000c). The resampling effort demonstrated that the concentrations of most metals in the lower turbidity samples were significantly lower than in the higher turbidity samples.

Evaluation of metals data from four wells (FTA-145-GP-4, FTA-145-GP07, FTA-145-GP10, and FTA-145-GP13) with relatively low turbidity (less than 100 NTUs) at the time of sample collection indicates that only five metals (chromium, iron, manganese, thallium, and vanadium) exceeded SSSLs. Of these metals, manganese (FTA-145-GP04), thallium (three locations), and vanadium (FTA-145-GP04) concentrations also exceeded their respective background concentrations (a background value for chromium was not available). With the exception of one "B"-flagged thallium result, the concentrations of these metals were within the range of background values determined by SAIC (1998). The thallium results (0.0063 mg/L) at FTA-145-GP10 marginally exceeded the background range (0.0053 mg/L).

Volatile Organic Compounds. Acetone, carbon disulfide, chloroform, chloromethane, and methylene chloride were detected in groundwater samples. The chloroform and methylene chloride results were flagged with a "B" data qualifier, signifying that these compounds were also detected in an associated laboratory or field blank sample. VOC concentrations were below residential human health SSSLs.

Semivolatile Organic Compounds. Di-n-butyl phthalate, phenol, and bis(2-ethylhexyl)phthalate were detected in groundwater samples. SVOCs were not detected at six sample locations. The phenol results were flagged with a "B" data qualifier, signifying that this compound was also detected in an associated laboratory or field blank sample. The bis(2-ethylhexyl)phthalate concentration (0.0064 mg/L) at sample location FTA-145-GP02 exceeded the residential human health SSSL (0.0043 mg/L).

5.4 Surface Water Analytical Results

Five surface water samples were collected at the Former Motor Pool Area 1800/1900 at the sample locations shown on Figure 3-1. Analytical results were compared to recreational site user human health SSSLs, ESVs, and background concentrations, as presented in Table 5-4.

Metals. Fourteen metals were detected in surface water samples collected at the Former Motor Pool Area 1800/1900. Sample location FTA-100-SW/SD02 contained thirteen of the fourteen detected metals.

None of the detected metals concentrations exceeded recreational site-user human health SSSLs. Barium (five locations) and mercury (WS145-SW/SD01) concentrations exceeded ESVs. The barium results were below the background concentration. A background concentration for mercury was not available.

Volatile Organic Compounds. Acetone, methylene chloride, toluene, and trichloroethene were detected in surface water samples. However, none of the VOC concentrations exceeded SSSLs or ESVs.

Semivolatile Organic Compounds. Bis(2-ethylhexyl)phthalate was detected in three of the surface water samples (FTA-100-SW/SD02, FTA-145-SW/SD02, and WS-145-SW/SD01) at concentrations exceeding the ESV but below the SSSL.

5.5 Sediment Analytical Results

Five sediment samples were collected for chemical and physical analyses at the Former Motor Pool Area 1800/1900 at the locations shown on Figure 3-1. Analytical results were compared to recreational site user human health SSSLs, ESVs, and background concentrations, as presented in Table 5-5.

Metals. Twenty-two metals were detected in sediment samples collected at the Former Motor Pool Area 1800/1900. The sample collected from FTA-100-SW/SD02 contained all of the detected metals. The samples collected from FTA-100-SW/SD01, FTA-145-SW/SD01, FTA-145-SW/SD02, and WS-145-SW/SD01 contained twenty, nineteen, nineteen, and nineteen of the detected metals, respectively. However, none of the metals were detected at a concentration exceeding SSSLs or ESVs.

Volatile Organic Compounds. Acetone, benzene, bromomethane, methylene chloride, and p-cymene were detected in sediment samples collected at the Former Motor Pool Area 1800/1900. The bromomethane and methylene chloride analytical results were flagged with a "B" data qualifier, signifying that these compounds were also detected in an associated laboratory or field blank sample. Sample location FTA-145-SW/SD01 contained four of the five detected VOCs. None of the detected VOCs was present at a concentration exceeding SSSLs or ESVs.

Semivolatile Organic Compounds. Eleven SVOCs, including benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(ghi)perylene, benzo(k)fluoranthene, chrysene, di-n-butyl phthalate, fluoranthene, indeno(1,2,3-cd)pyrene, pyrene, and bis(2-ethylhexyl)phthalate were detected in sediment samples collected at the Former Motor Pool Area 1800/1900. None of the detected SVOCs was present at a concentration exceeding SSSLs or ESVs.

Total Organic Carbon. TOC was detected in each of the five sediment samples. TOC concentrations ranged from 1,560 mg/kg to 7,020 mg/kg. The TOC results are summarized in Appendix E.

Grain Size. The results of grain size analysis for sediment samples are included in Appendix E.

6.0 Summary and Conclusions and Recommendations

IT, under contract with USACE, completed an SI at the Former Motor Pool Area 1800/1900 at FTMC, Calhoun County, Alabama. The SI was conducted to determine whether chemical constituents are present at the Former Motor Pool Area 1800/1900 and, if present, whether the concentrations would present an unacceptable risk to human health or the environment. The SI at the Former Motor Pool Area 1800/1900 consisted of the sampling and analyses of 12 surface soil samples, 17 subsurface soil samples, 11 groundwater samples, 2 depositional soil samples, 5 surface water samples, and 5 sediment samples. In addition, 11 monitoring wells were installed in the residuum groundwater zone to facilitate groundwater sample collection and to provide site-specific geological and hydrogeological characterization information.

The analytical results indicate that metals, VOCs, and SVOCs were detected in the environmental media sampled. Analytical results were compared to the residential human health SSSLs and ESVs. The SSSLs and ESVs were developed by IT for human health and ecological risk evaluations as part of the ongoing SIs being performed under the BRAC Environmental Restoration Program at FTMC. Additionally, metals results exceeding the SSSLs and ESVs were compared to media-specific background concentrations (SAIC, 1998), and SVOC concentrations exceeding SSSLs and ESVs in surface and depositional soils were compared to PAH background screening values (IT, 2000b).

The potential impact to human receptors is expected to be minimal. The metals that exceeded residential human health SSSLs with the exception of cadmium (FTA-145-GP10) were within background concentrations or the range of background values, and thus do not pose an unacceptable risk to human receptors. The SVOCs benzo(a)anthracene and benzo(a)pyrene were detected in one surface soil sample at concentrations exceeding residential human health SSSLs but below PAH background screening values for soils beneath asphalt. The SVOC bis(2-ethylhexyl)phthalate exceeded SSSLs in groundwater at FTA-145-GP02. However, bis(2-ethylhexyl)phthalate is a common laboratory contaminant in groundwater samples. In the industrial/business land use scenario, the potential threat to human health is expected to be negligible.

Several metals were detected in site media at concentrations exceeding ESVs and background concentrations. In addition, the concentrations of six SVOCs exceeded ESVs. However, the

potential impact to ecological receptors is expected to be minimal based on the existing viable habitat. The site, a well-developed area consisting of buildings and paved roads with limited grass areas, is projected for continued industrial/business use. Viable ecological habitat is presently limited and is not expected to increase in the future land-use scenario. Consequently, the threat to potential ecological receptors is expected to be low.

Based on the results of the SI, past operations at the Former Motor Pool Area 1800/1900 do not appear to have adversely impacted the environment. The metals and organic compounds detected in site media do not pose an unacceptable risk to human health or the environment. Therefore, IT recommends "No Further Action" and unrestricted land reuse at the Former Motor Pool Area 1800/1900.

7.0 References

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Appendix D

Survey Data
Former Motor Pool Area 1800/1900, Parcels 145(7), 52(7), and 48(7)
Fort McClellan, Calhoun County Alabama

Sample Location	Northing	Easting	Ground Elevation (ft msl)	Top of Casing Elevation (ft msl)
FTA-100-SW/SD01	1167635.050	669864.280	764.63	NA
FTA-100-SW/SD02	1167791.520	669753.540	761.93	NA
FTA-145-DEP01	1168364.483	669881.280	773.60	NA
FTA-145-DEP02	1168080.824	669877.900	775.96	NA
FTA-145-GP01	1167892.947	670055.297	775.85	NA
FTA-145-GP02(W)	1167859.913	670105.194	776.18	777.02
FTA-145-GP02(SS)	1167878.966	670091.735	775.45	NA
FTA-145-GP03(W)	1167690.251	670261.982	779.51	779.67
FTA-145-GP03(SS)	1167670.834	670194.351	777.84	NA
FTA-145-GP04(W)	1167551.422	670304.122	779.18	781.51
FTA-145-GP04(SS)	1167524.192	670238.974	776.77	NA
FTA-145-GP05(W)	1167476.609	670220.940	775.81	779.10
FTA-145-GP05(SS)	1167464.502	670217.696	776.48	NA
FTA-145-GP06(W)	1167740.677	670154.035	777.10	778.92
FTA-145-GP06(SS)	1167727.217	670108.079	775.31	NA
FTA-145-GP07	1167450.553	670383.235	780.91	781.37
FTA-145-GP08	1167702.852	670374.541	784.54	786.61
FTA-145-GP09(W)	1167936.091	670271.641	787.69	788.76
FTA-145-GP09(SS)	1167957.607	670259.210	787.45	NA
FTA-145-GP10	1168182.843	669894.361	775.49	777.73
FTA-145-GP11	1167887.228	670072.010	775.75	NA
FTA-145-GP12	1168230.279	670106.191	784.99	786.27
FTA-145-GP13	1168394.646	669807.556	758.27	760.74
FTA-145-GP14	1168532.141	669762.665	764.06	NA
FTA-145-SW/SD01	1168519.240	669550.727	757.92	NA
FTA-145-SW/SD02	1168102.917	669647.896	759.36	NA
WS-145-SW/SD01	1167216.732	670358.586	772.57	NA

Horizontal coordinates were referenced to the U.S. State Plane Coordinate System, Alabama East Zone, North American Datum (NAD83), 1983

Elevations referenced to the North American Vertical Datum of 1988 (NAVD88).

NA - Not available, temporary well not installed.
ft msl - Feet mean sea level.
W - Temporary well/groundwater sampling location.
SS - Soil sampling location.